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Adelman

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(54) VOLUMETRIC VECTOR NODE AND OBJECT BASED MULTI-DIMENSIONAL OPERATING SYSTEM

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Related U.S. Application Data

(63) Continuation of application No. 15/451,047, filed on Mar. 6, 2017, now Pat. No. 10,983,977, which is a continuation of application No. 14/256,530, filed on Apr. 18, 2014, now Pat. No. 9,626,387.

(60) Provisional application No. 61/814,177, filed on Apr. 19, 2013.

(51) **Int. Cl.**

G06F 16/22	(2019.01)
G06Q 30/0241	(2023.01)
G06F 16/21	(2019.01)
G06F 16/28	(2019.01)
G06F 16/955	(2019.01)

(52) **U.S. Cl.**
CPC ***G06F 16/2264*** (2019.01); ***G06F 16/21*** (2019.01); ***G06F 16/2237*** (2019.01); ***G06F 16/283*** (2019.01); ***G06F 16/289*** (2019.01); ***G06F 16/9566*** (2019.01); ***G06Q 30/0277*** (2013.01)

(58) **Field of Classification Search**
CPC .. G06F 16/2264; G06F 16/21; G06F 16/2237; G06F 16/283; G06F 16/289; G06F 16/9566; G06Q 30/0277
USPC 707/674, 741, 805, 822
See application file for complete search history.

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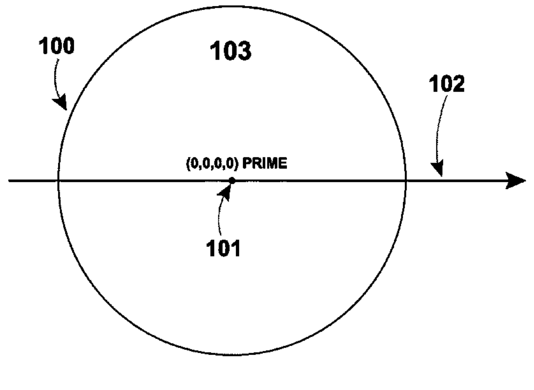
(57) **ABSTRACT**

A method for the visualization and addressing of data within a volumetric container, using XYZ coordinates represented as a vector. Whereas users build their own immersive experience, variants, and/or representations of their respective data as polygons nested within a virtual universe. This includes variants such as time, space, velocity and trajectory as they relate to data containers, and the tracking of each user's multi-dimensional representations. This method also creates permanent threaded connections between web data, social communities and data retrieved from any other source, to a structured polygon based correlation library.

19 Claims, 32 Drawing Sheets

Volumetric Operating Container with Vector Based Addressing System



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2014/0297629	A1*	10/2014	Lin	G06F 16/29 707/724

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FIG. 1

Volumetric Operating Container with Vector Based Addressing System

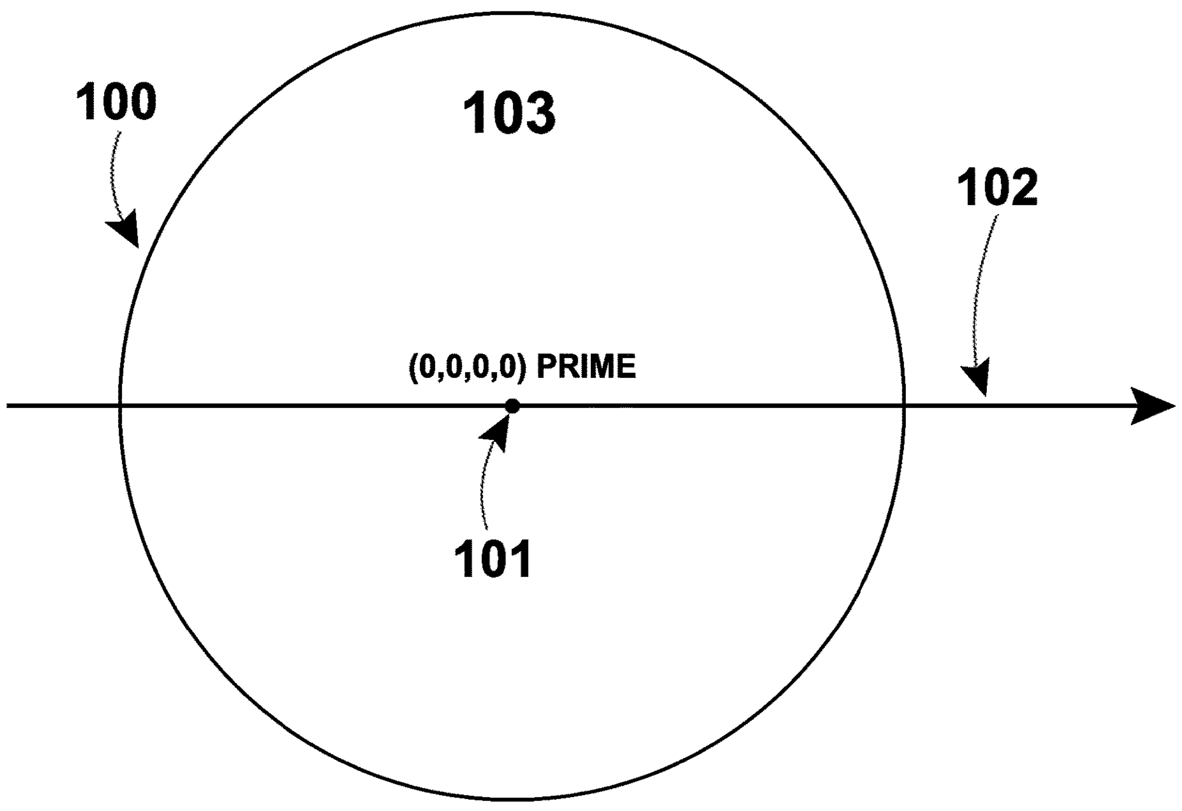


FIG. 2

Flowchart diagram of Core Software Engines

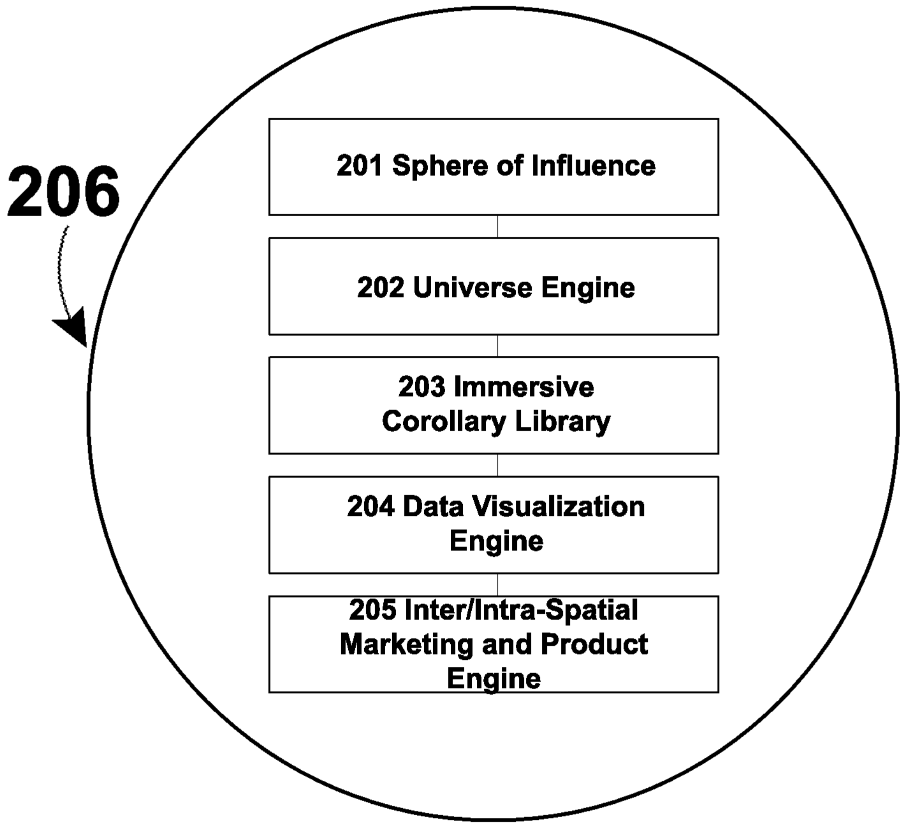

206
201 Sphere of Influence
202 Universe Engine
203 Immersive Corollary Library
204 Data Visualization Engine
205 Inter/Intra-Spatial Marketing and Product Engine

FIG. 3

Sphere of Influence as it relates to a user's Core Vector.

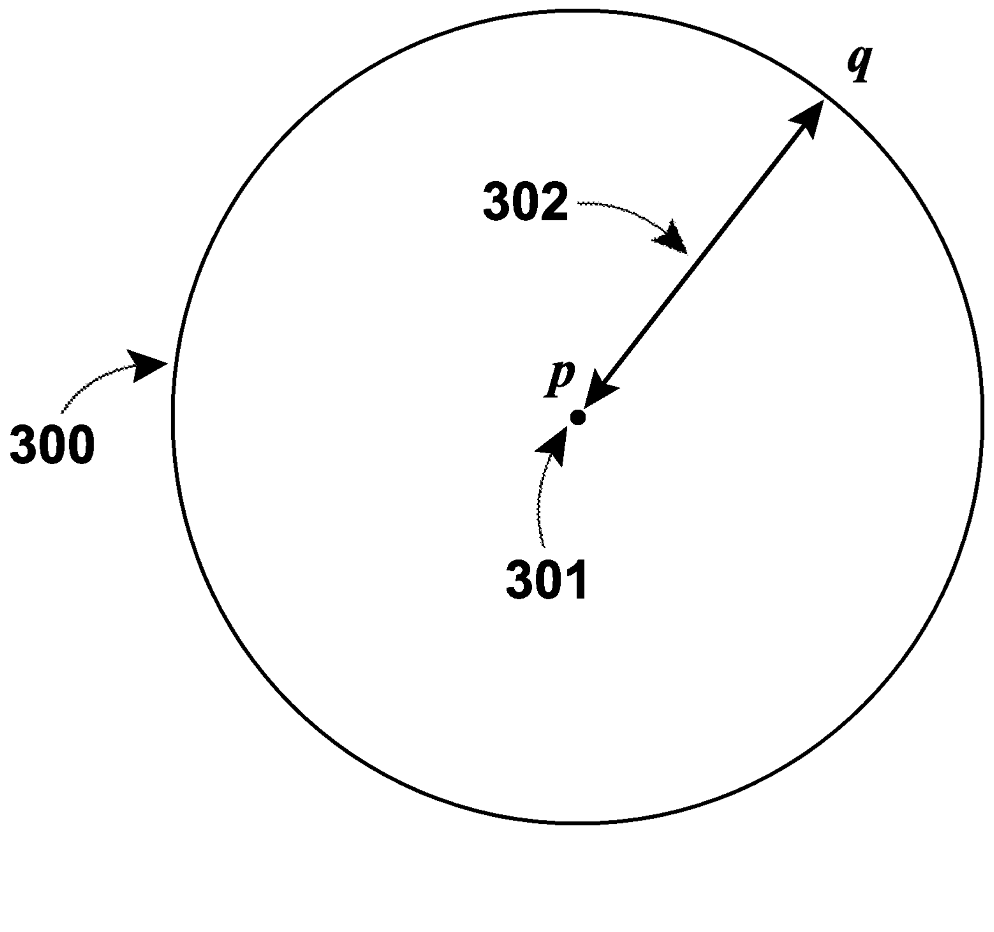


FIG. 4

Nested Spheres of Influence as they relate to a user's Core Vector.

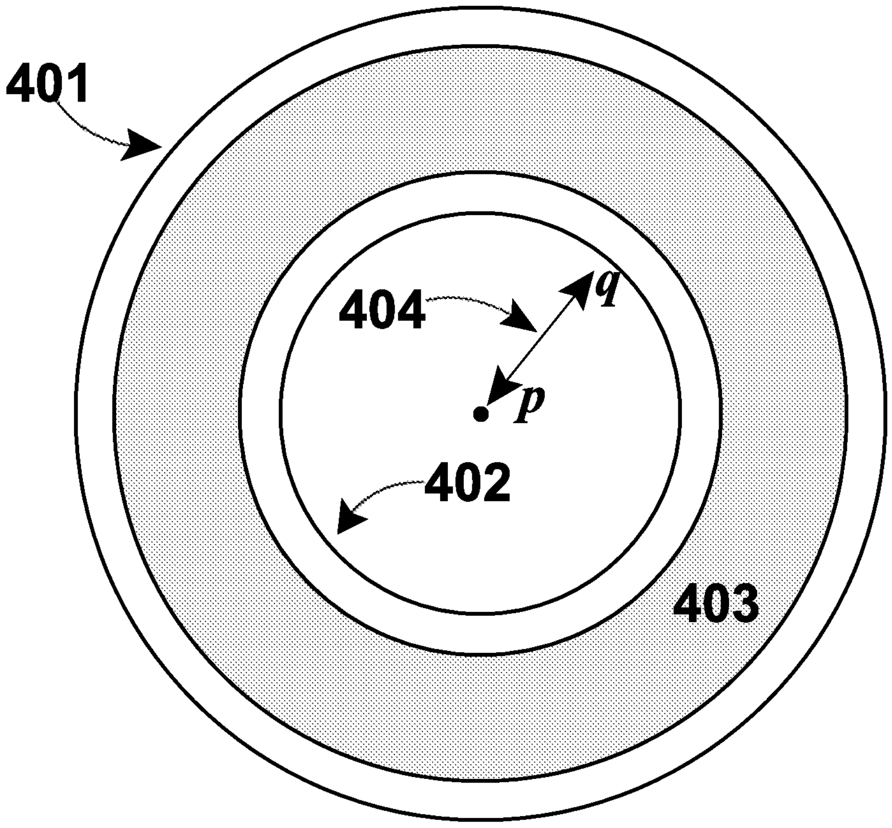


FIG. 5

Illustration of a typical user's volumetric container

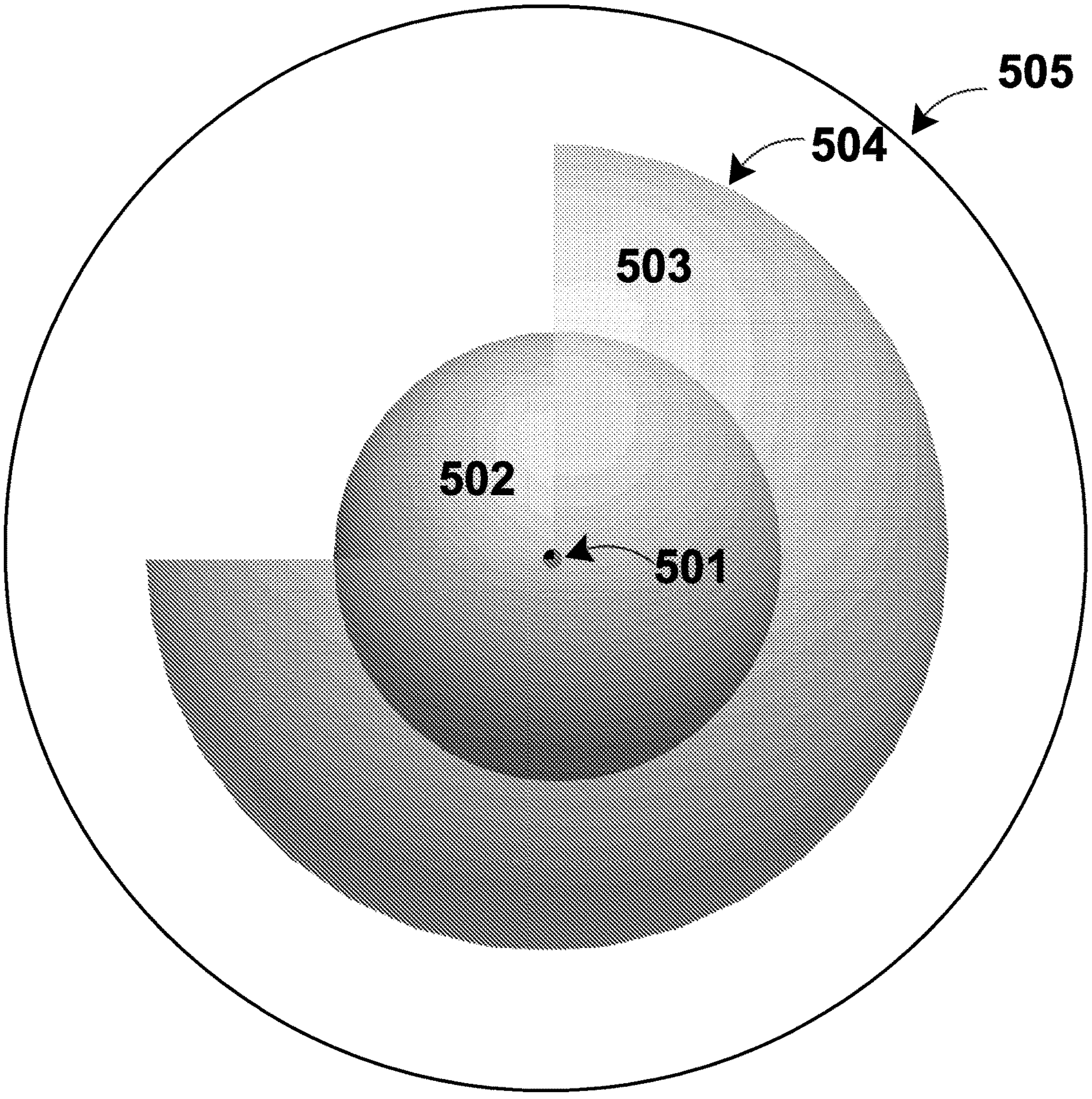


FIG. 6

Illustration of user's node and Sphere of Influence volume calculations

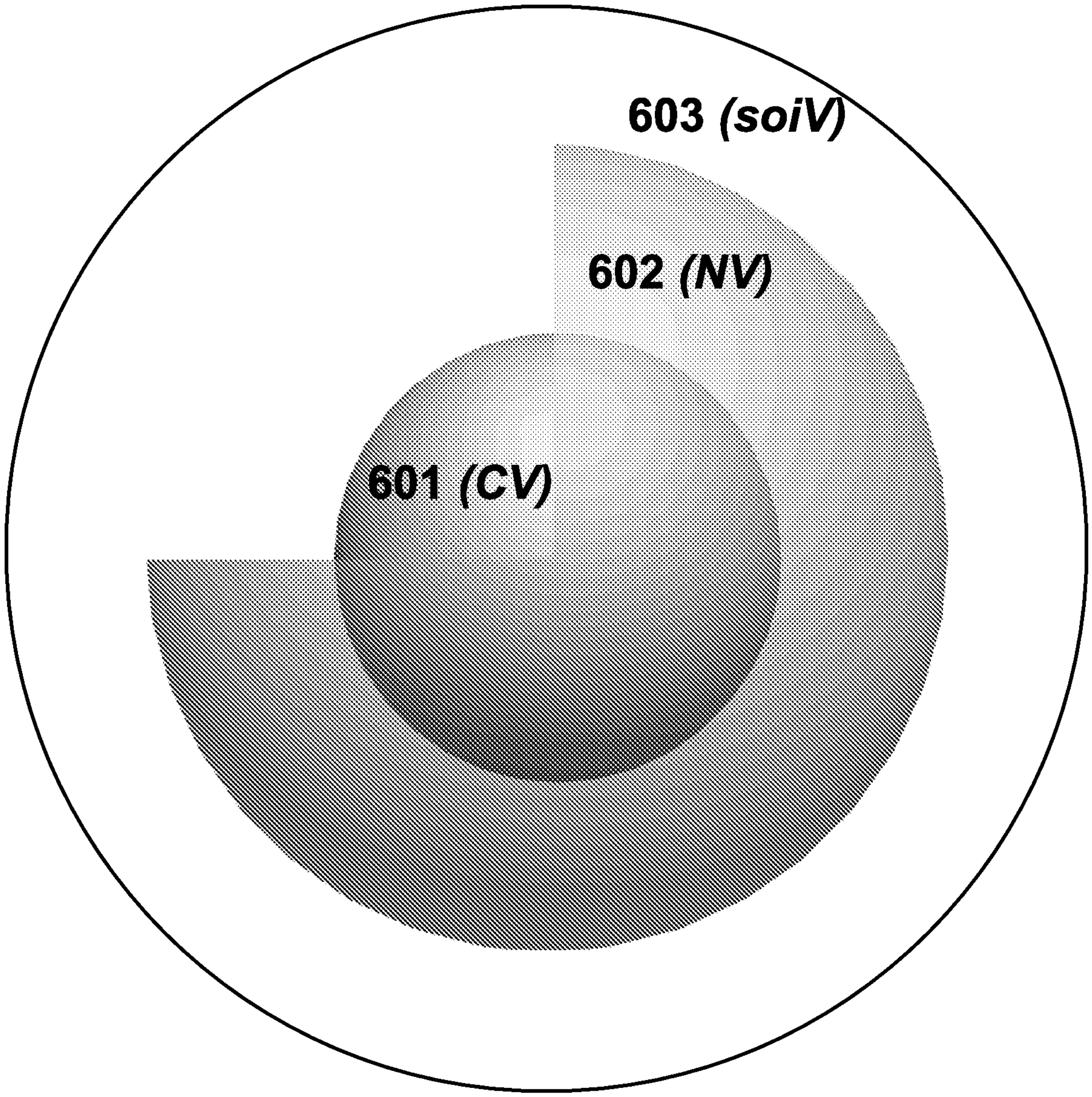


FIG. 7

Diagram of the Sphere of Influence *(soi)* Security Protocols as they relate to the user's container

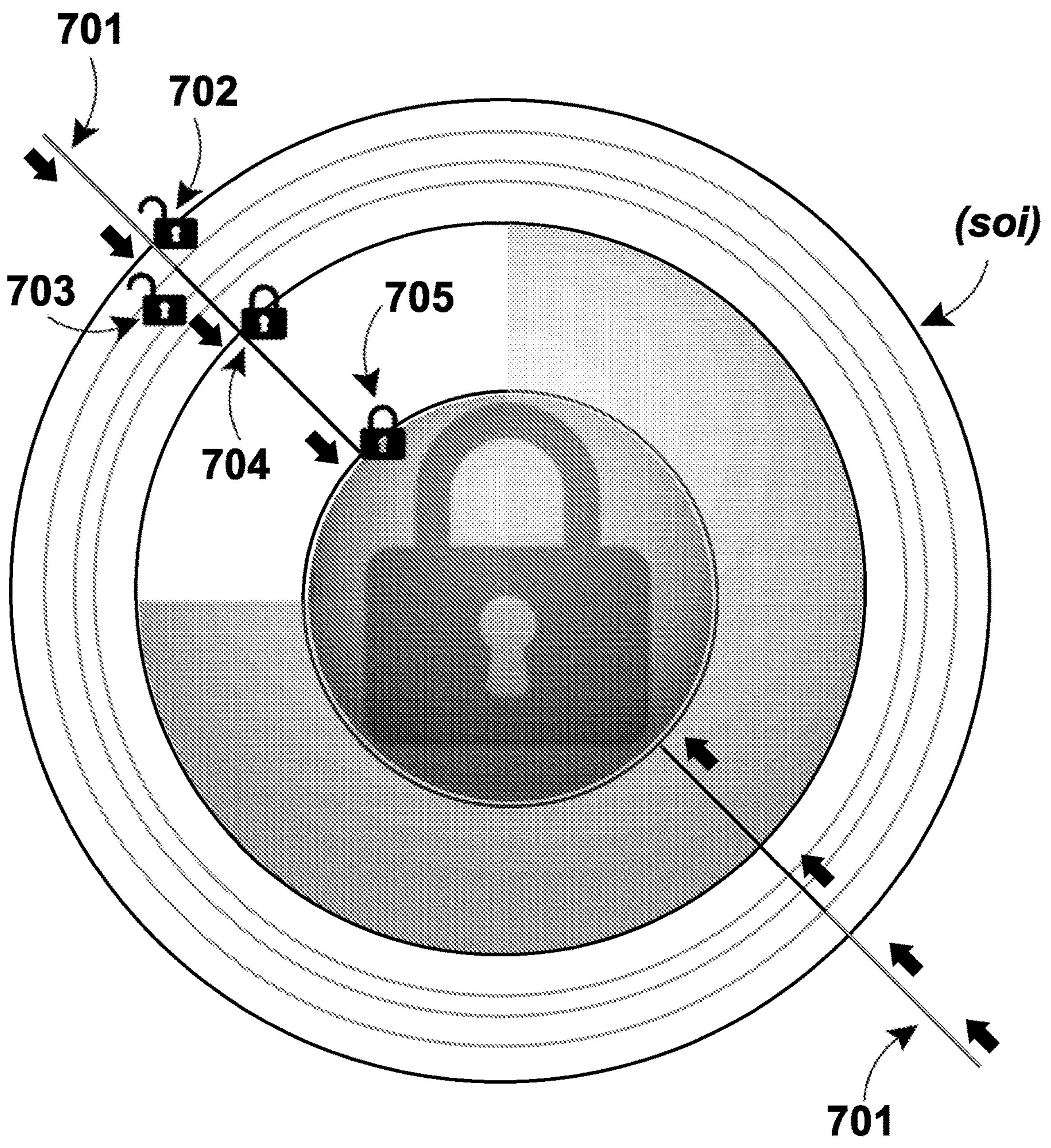


FIG. 8

Diagram of the Sphere of Influence *(soi)* Security Protocols as they relate to the Operating Container

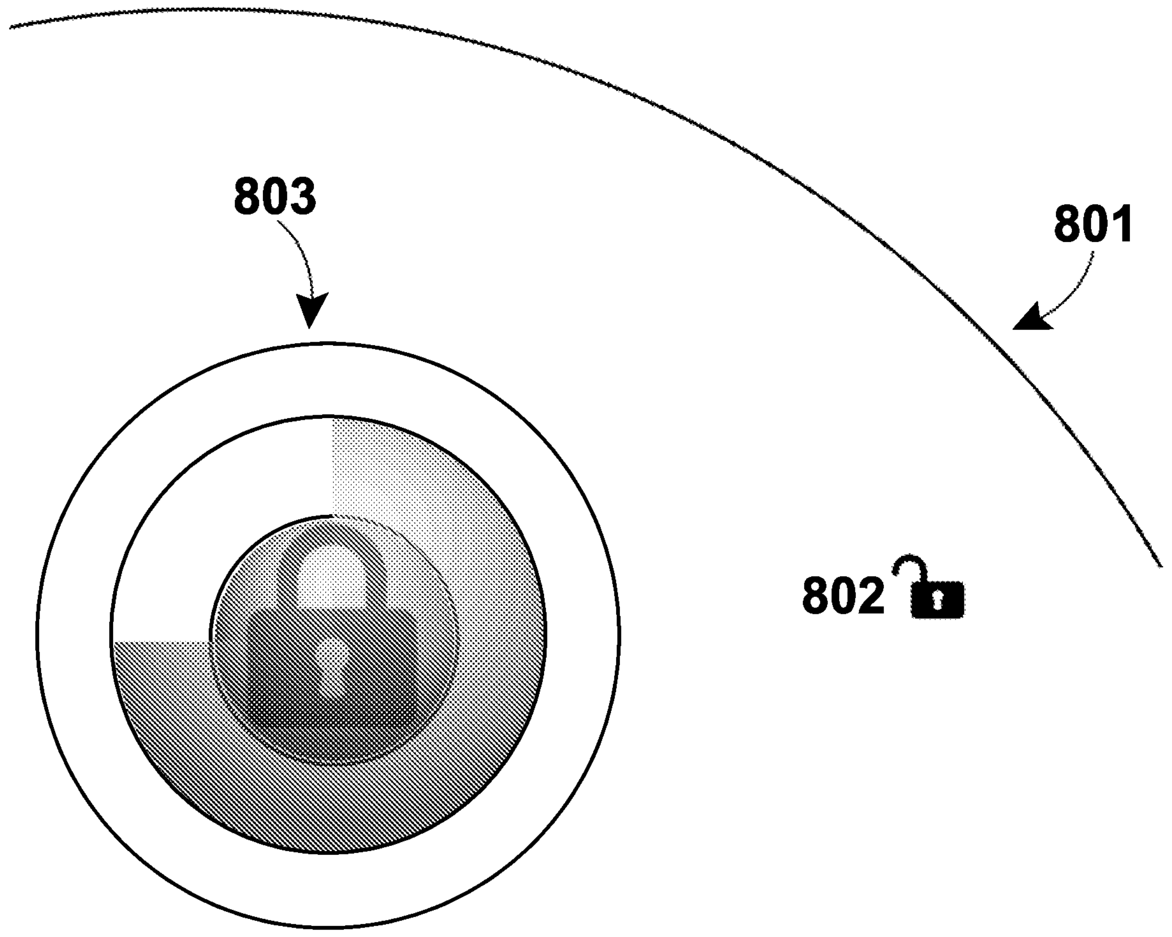


FIG. 9

Example of Interaction between two user's Sphere of Influence

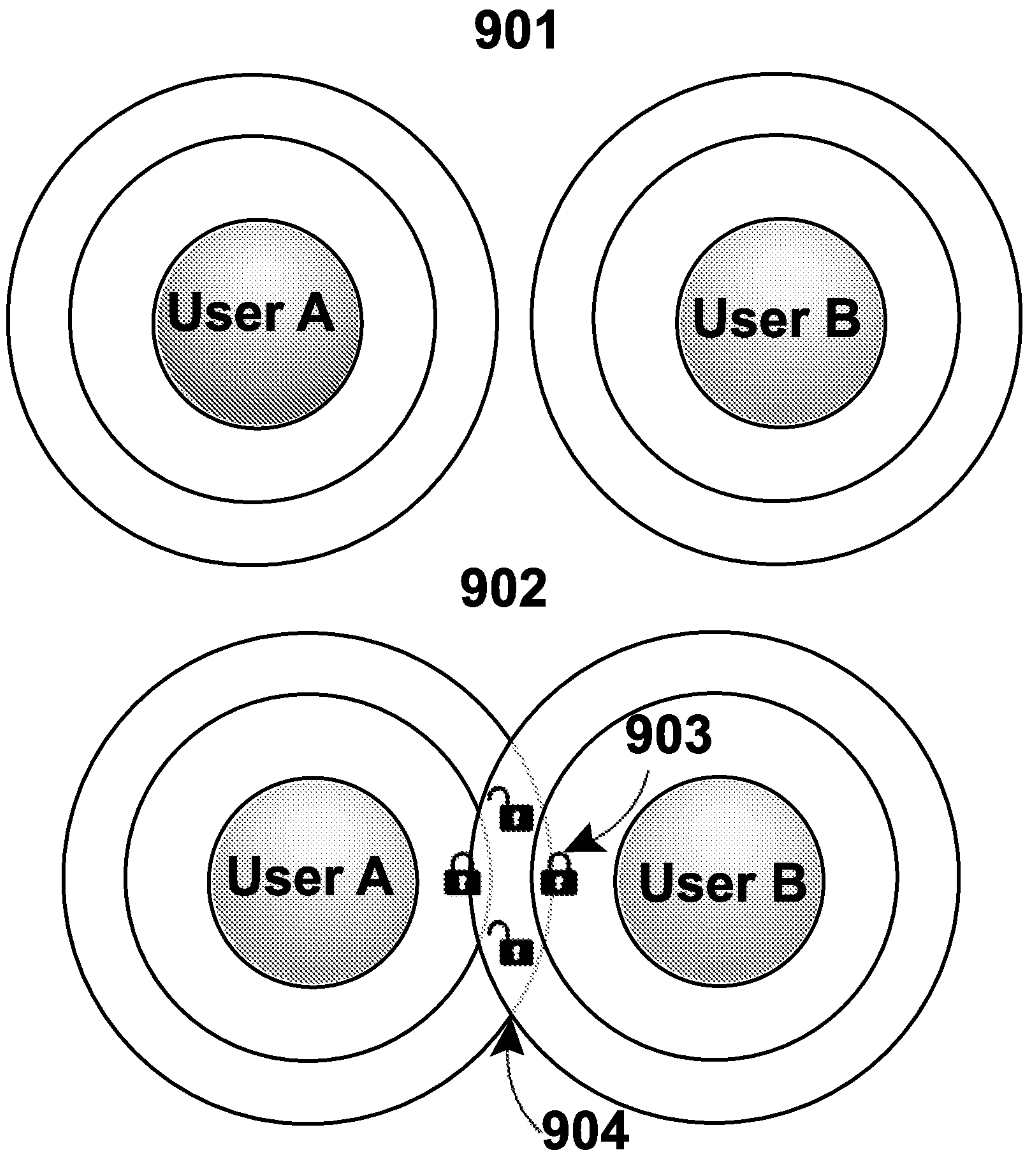


FIG. 10

Diagram of interaction between outside data, including advertising, and how users can control the permeation of information layer by layer

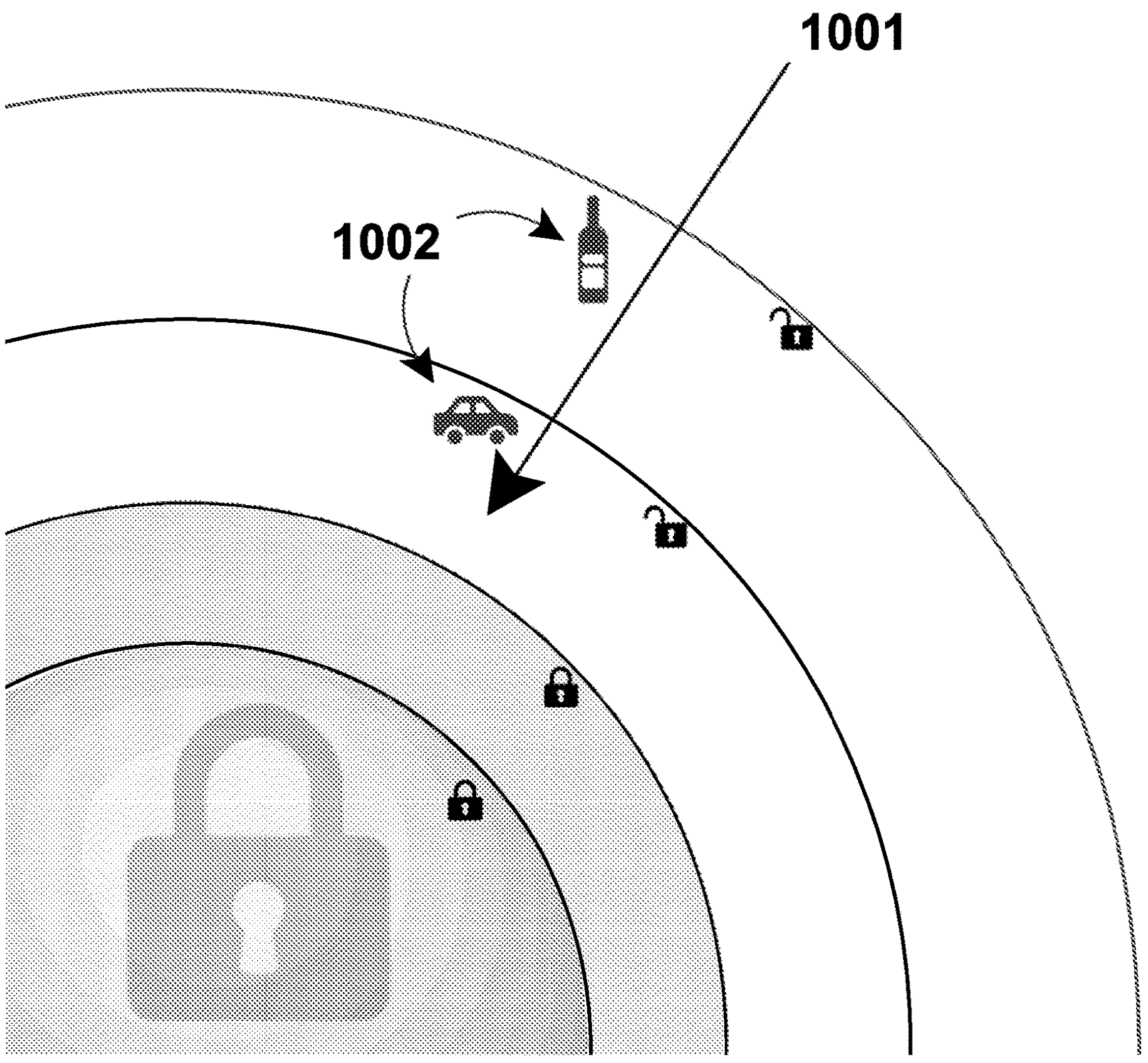


FIG. 11

Data States of two for more containers

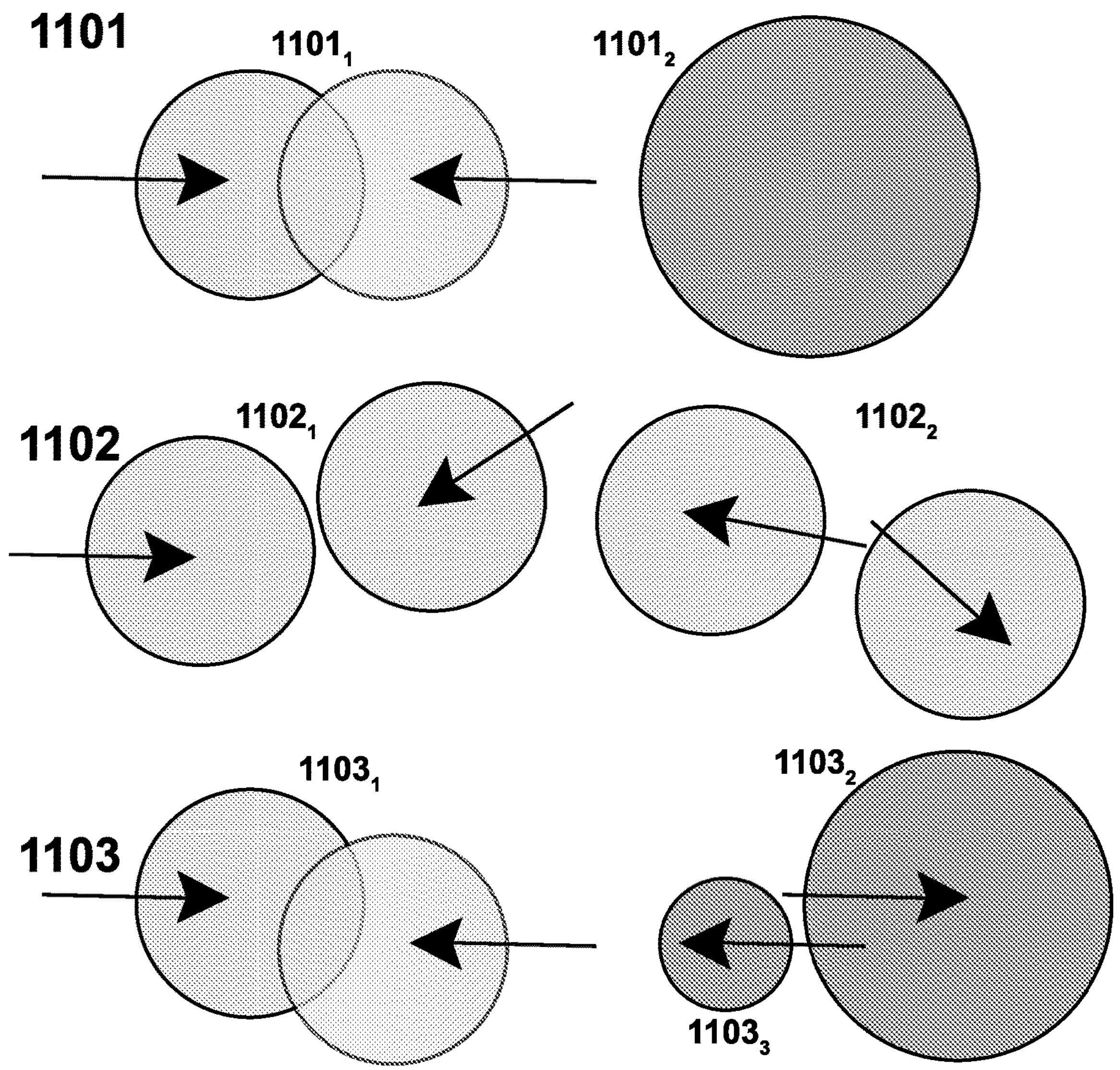


FIG. 12

Container relationships via Vector Node *(vN)* addressing on both a linear present timeline and multi-dimensional timelines

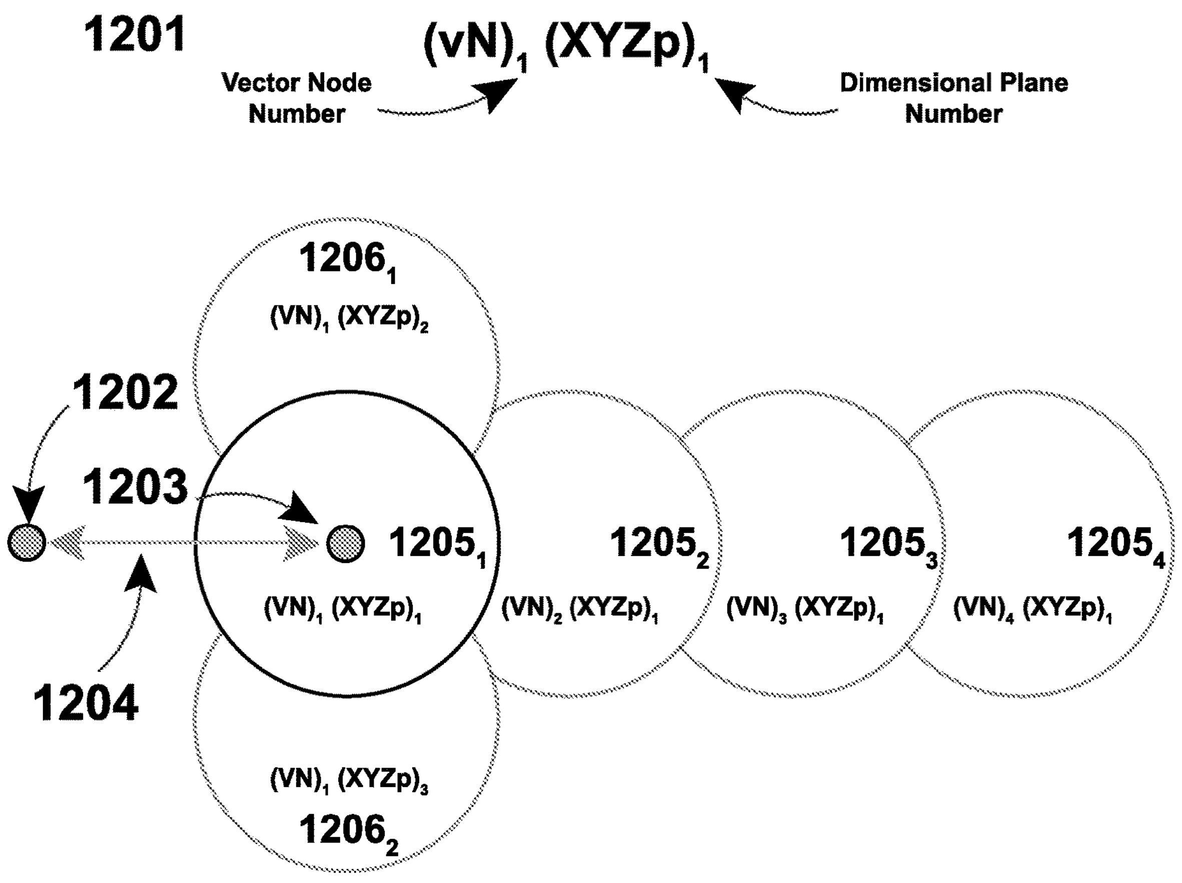


FIG. 13

Universe Engine with Vector Based Addressing System

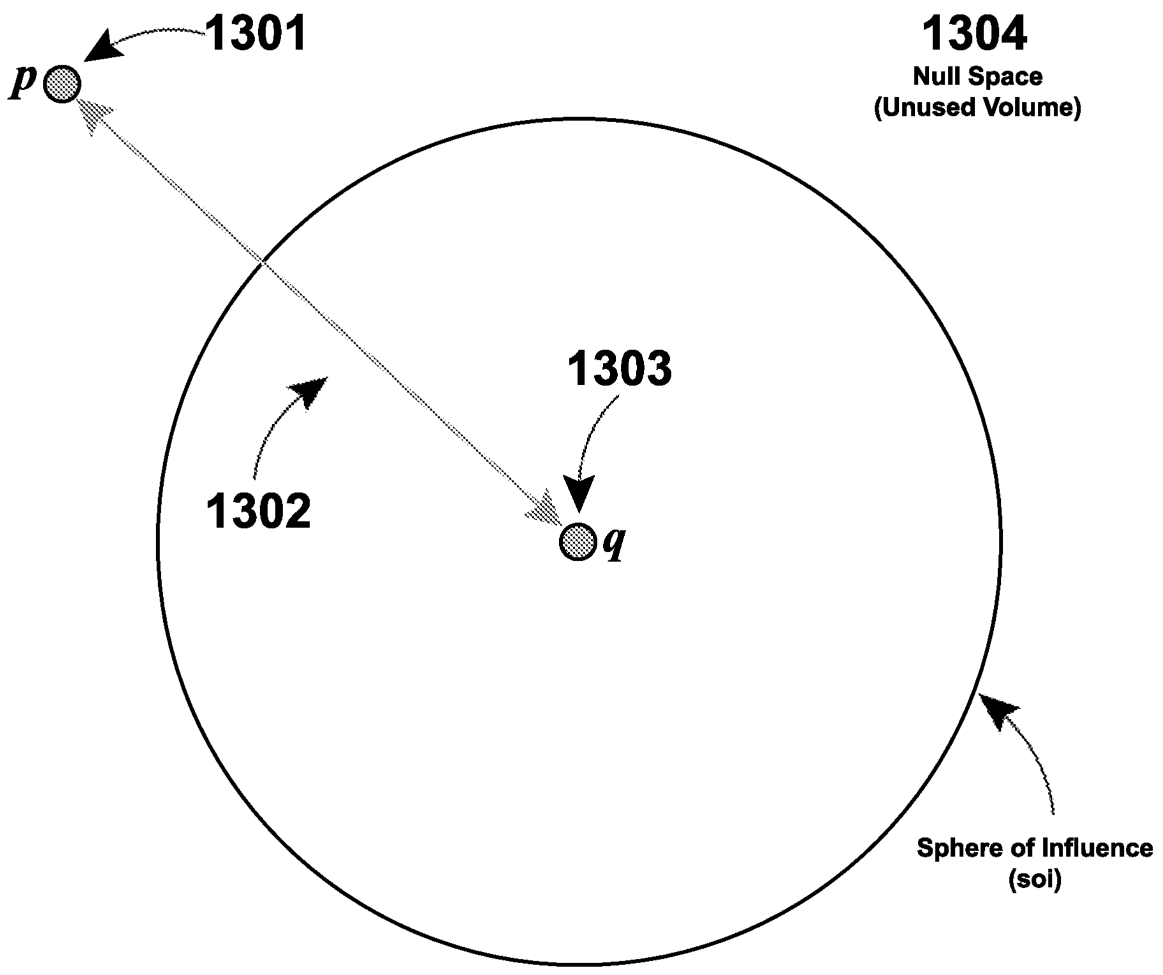


FIG. 14

Core Vector (CV) and Vector Node (VN) relationships

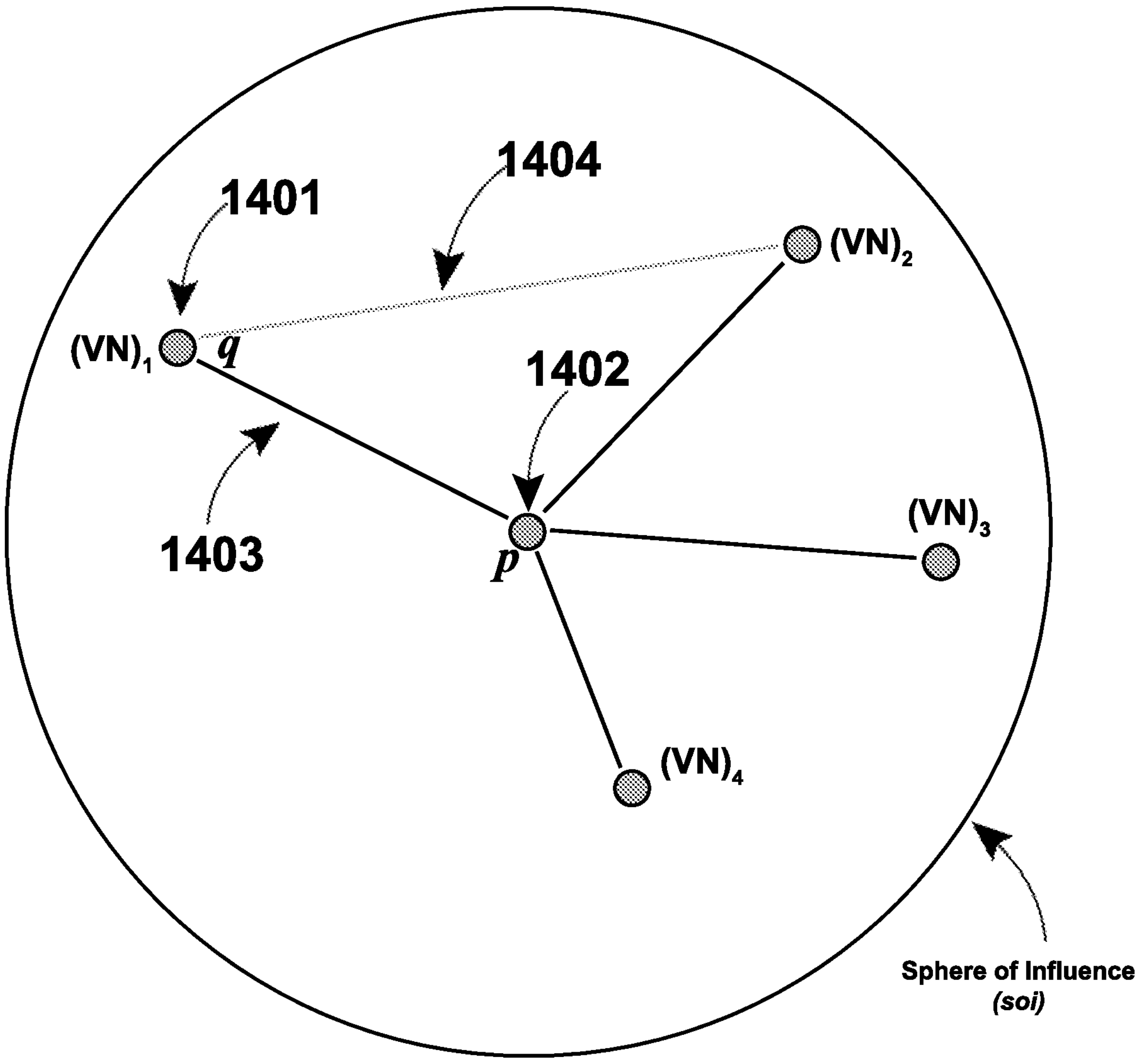


FIG. 15

Movement of Vector Data with Event Triggers on a Single Linear Timeline

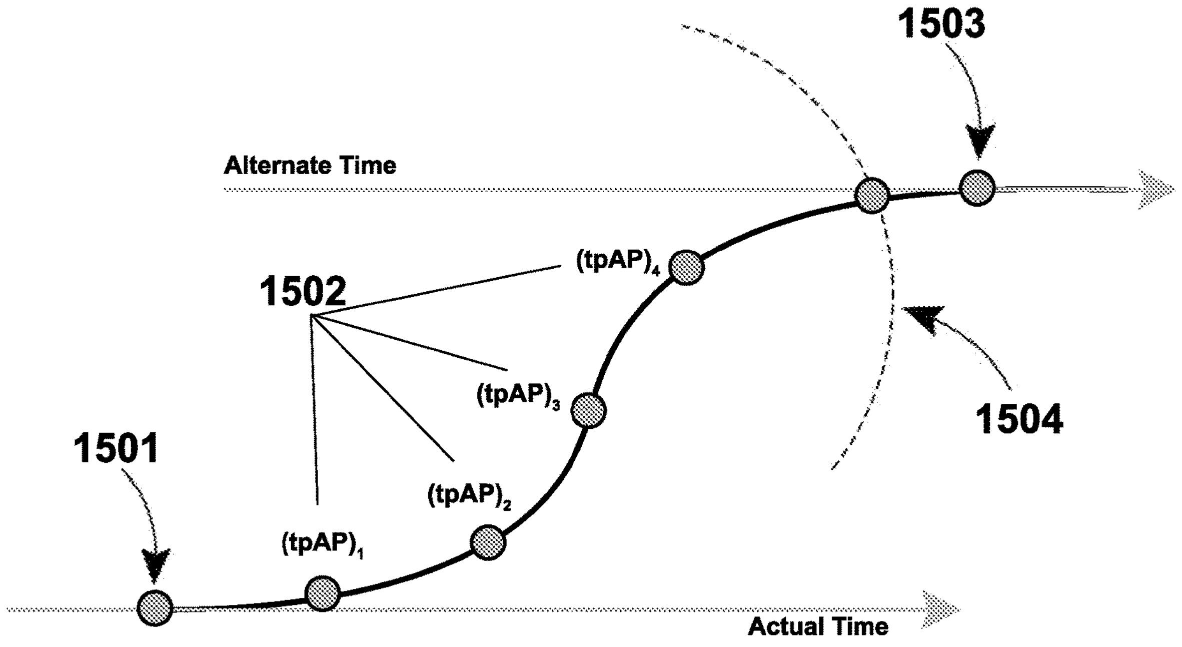


FIG. 16

Vector and Pixel Movement influenced by other forces of data in X, Y and Z space

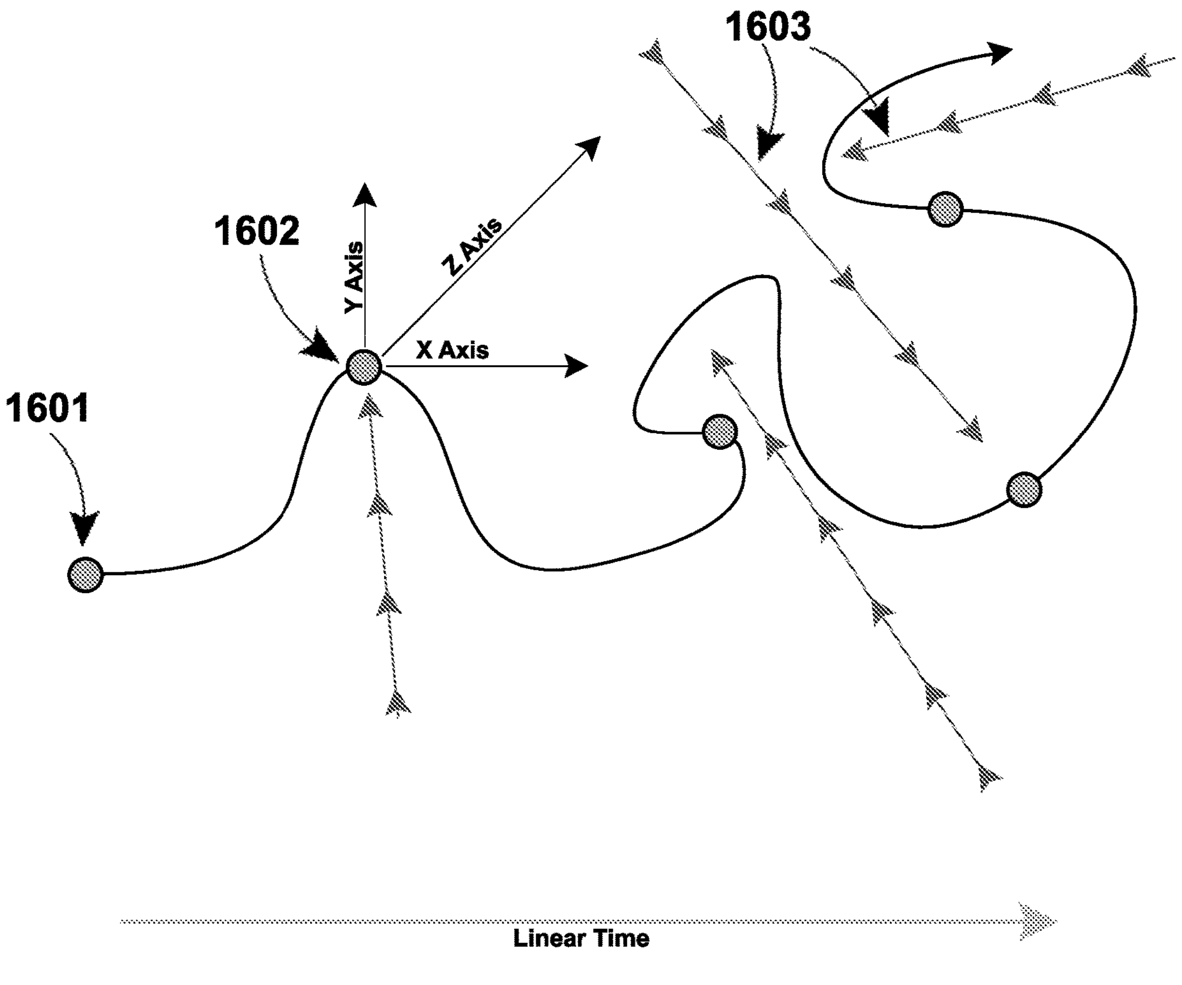


FIG. 17

Example usage of intersecting vector data and the creation of new vector data and corresponding volumetric containers.

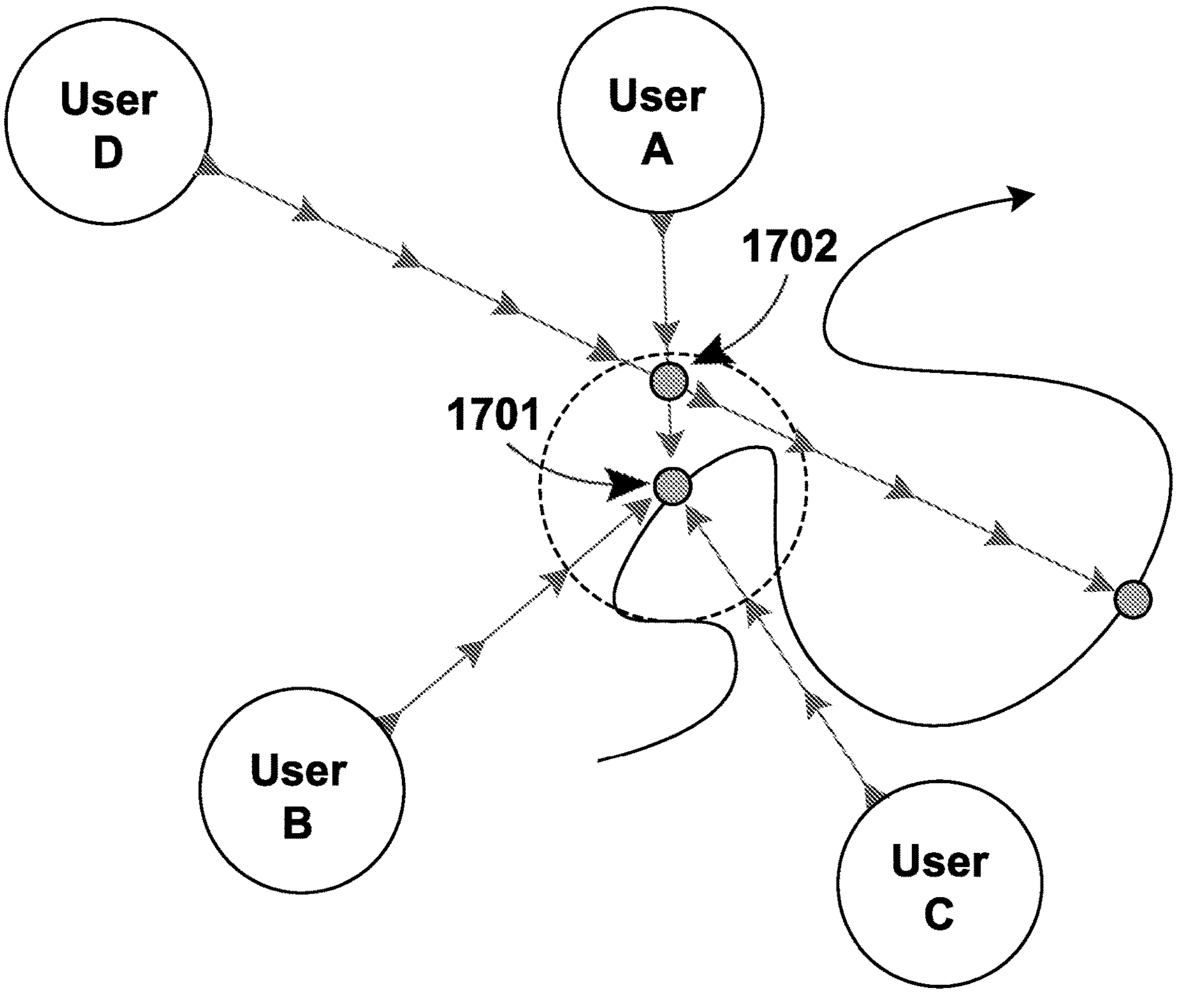


FIG. 18

Multi-Dimensional Vector Data with Time Spirals

(T) = Time
(p) = Past
(rT) = Reverse Time

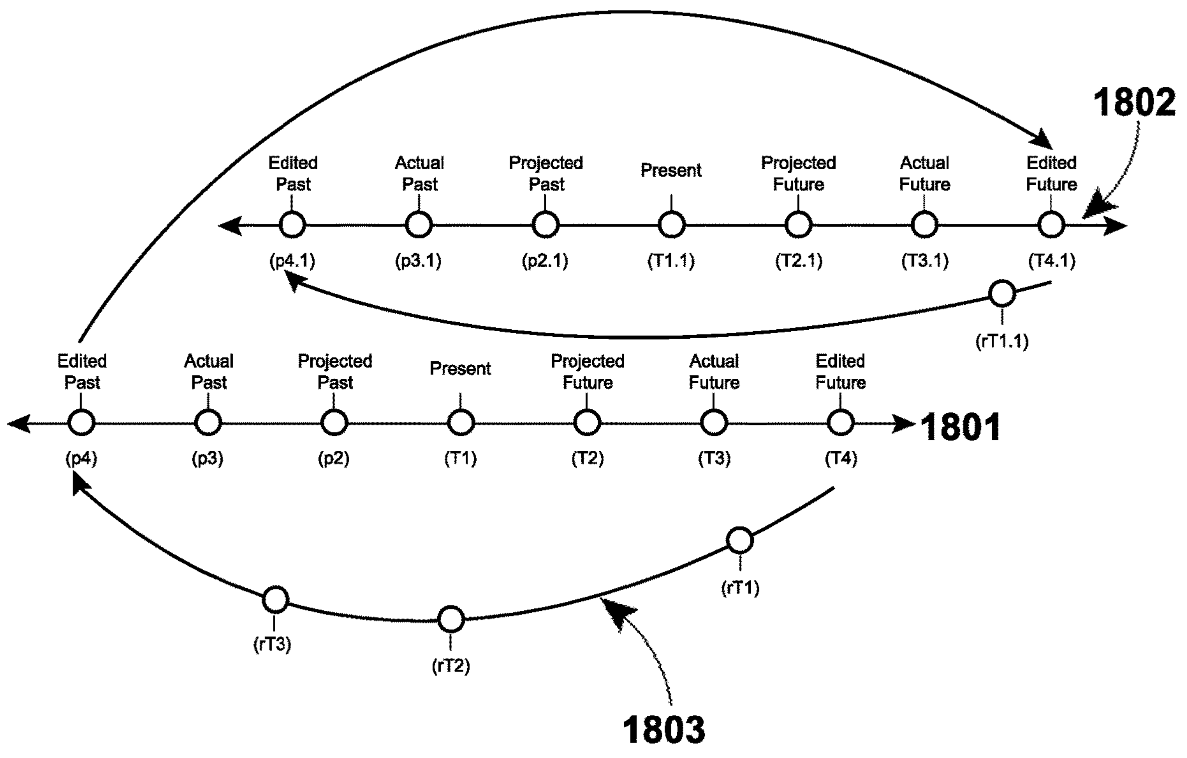


FIG. 19

Calculations for inter-vector nodes created between two (2) or more containers on the same dimensional plane.

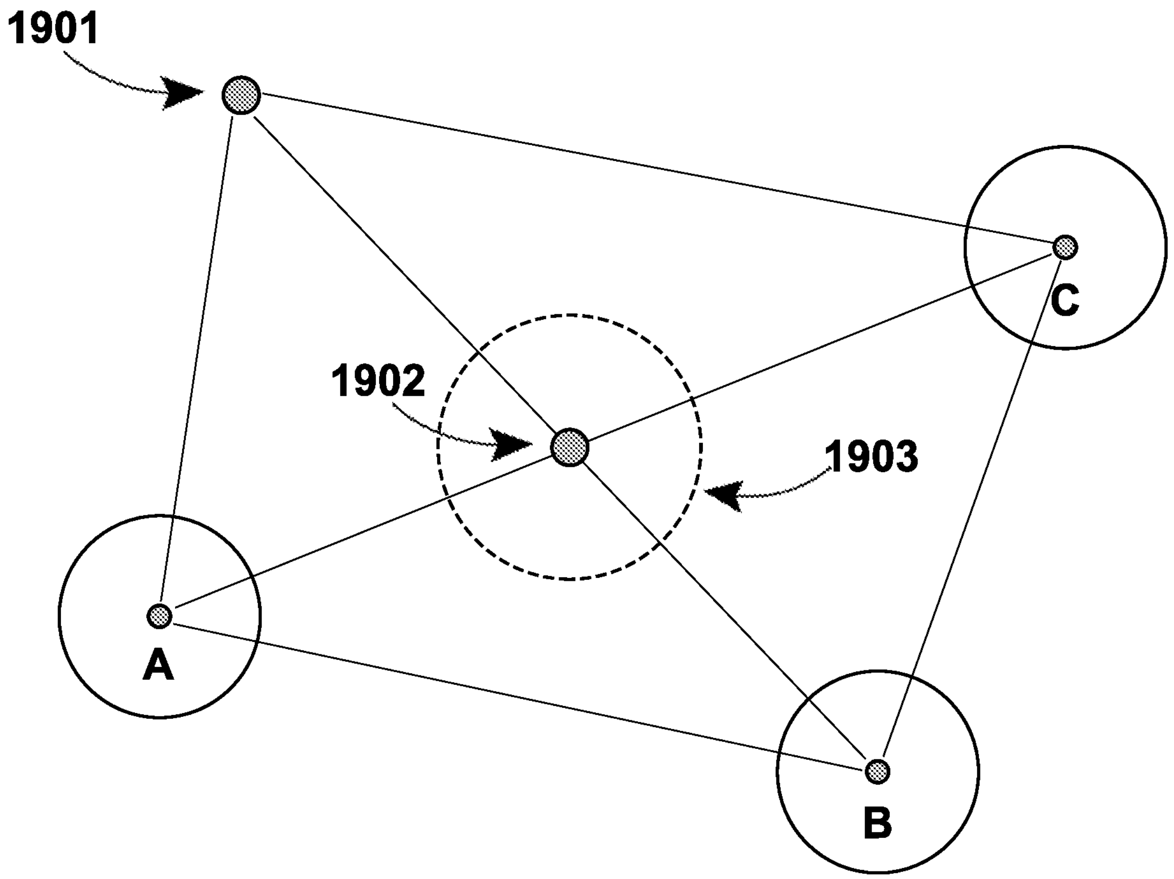


FIG. 20

Calculations for inter-vector nodes created between two (2) or more containers on different dimensional planes.

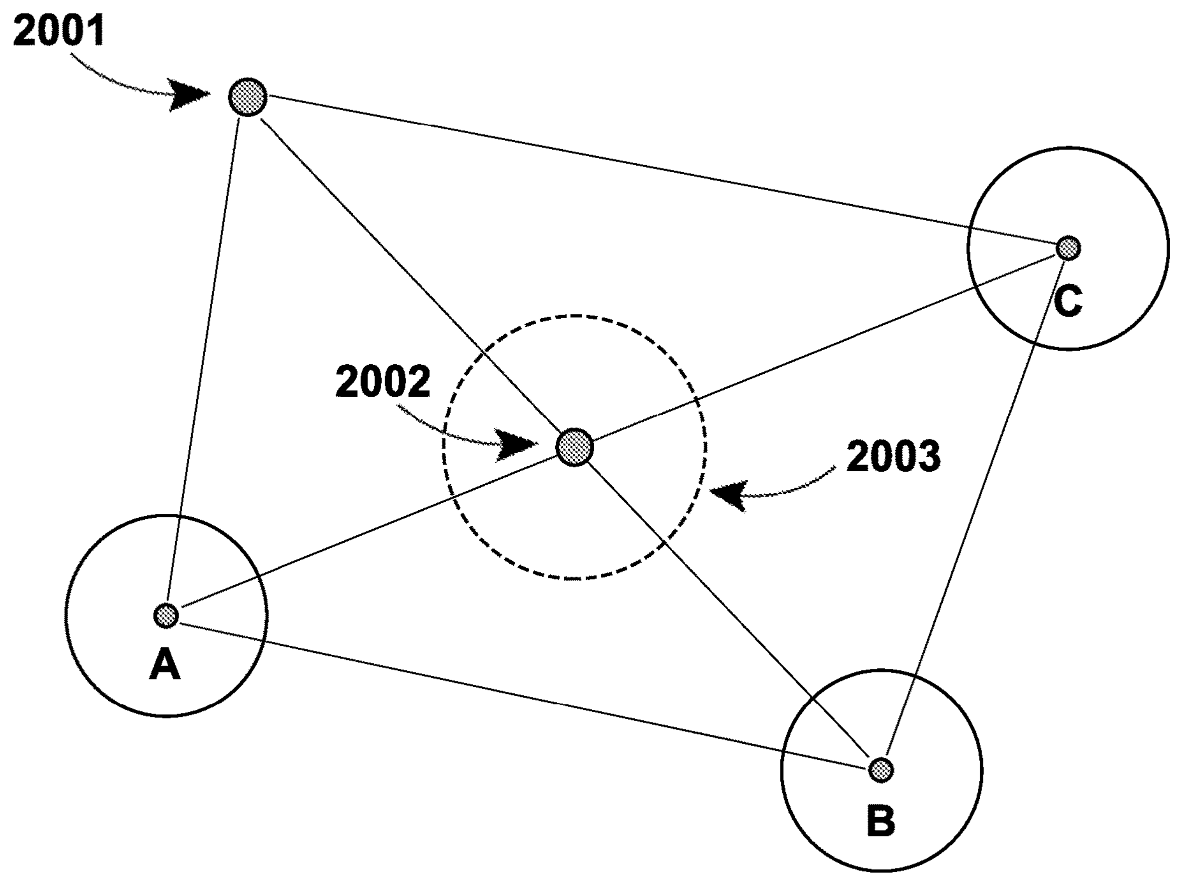


FIG. 21

Structure diagram of a user's typical container

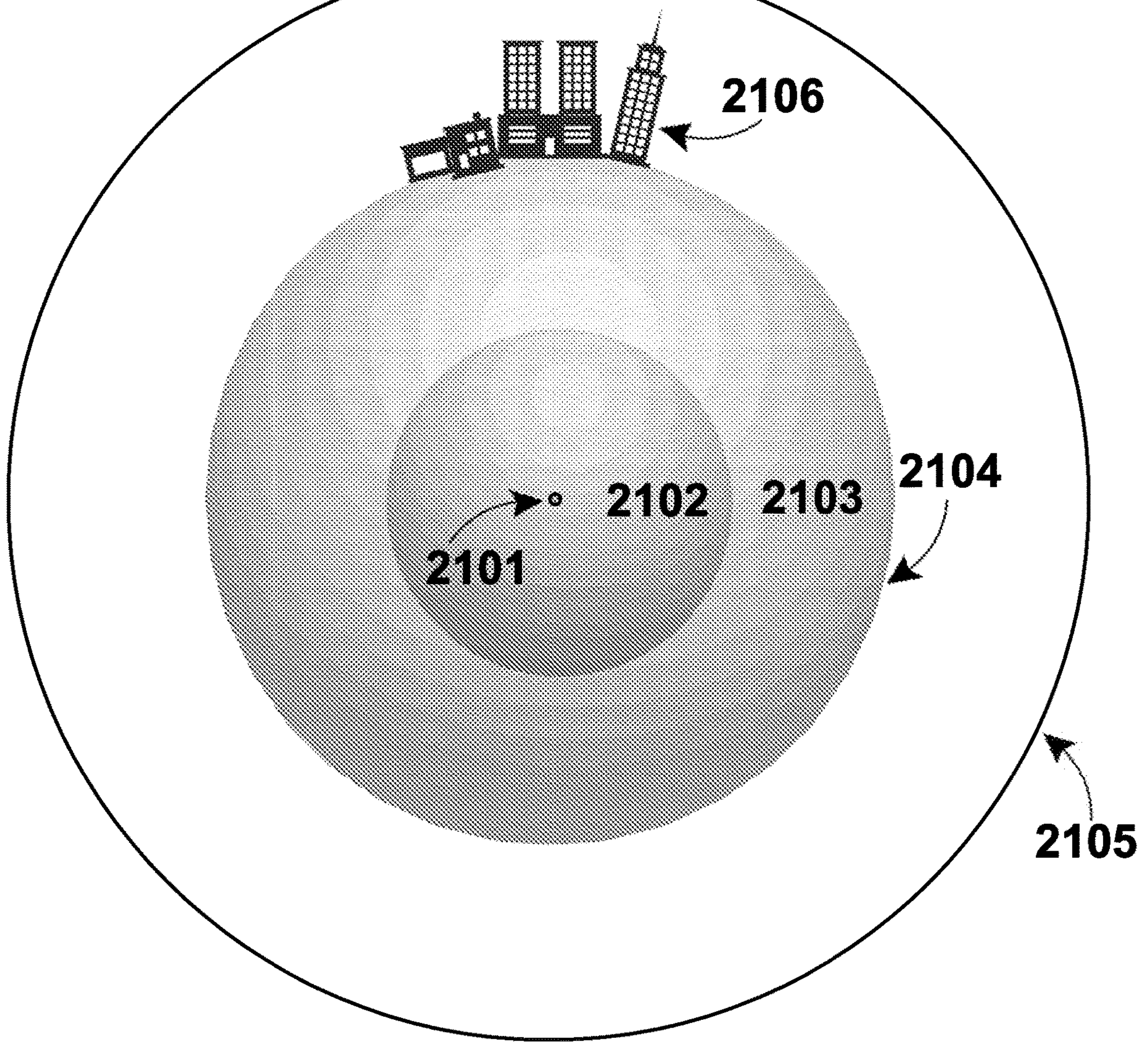


FIG. 22

Diagram of rigid containers

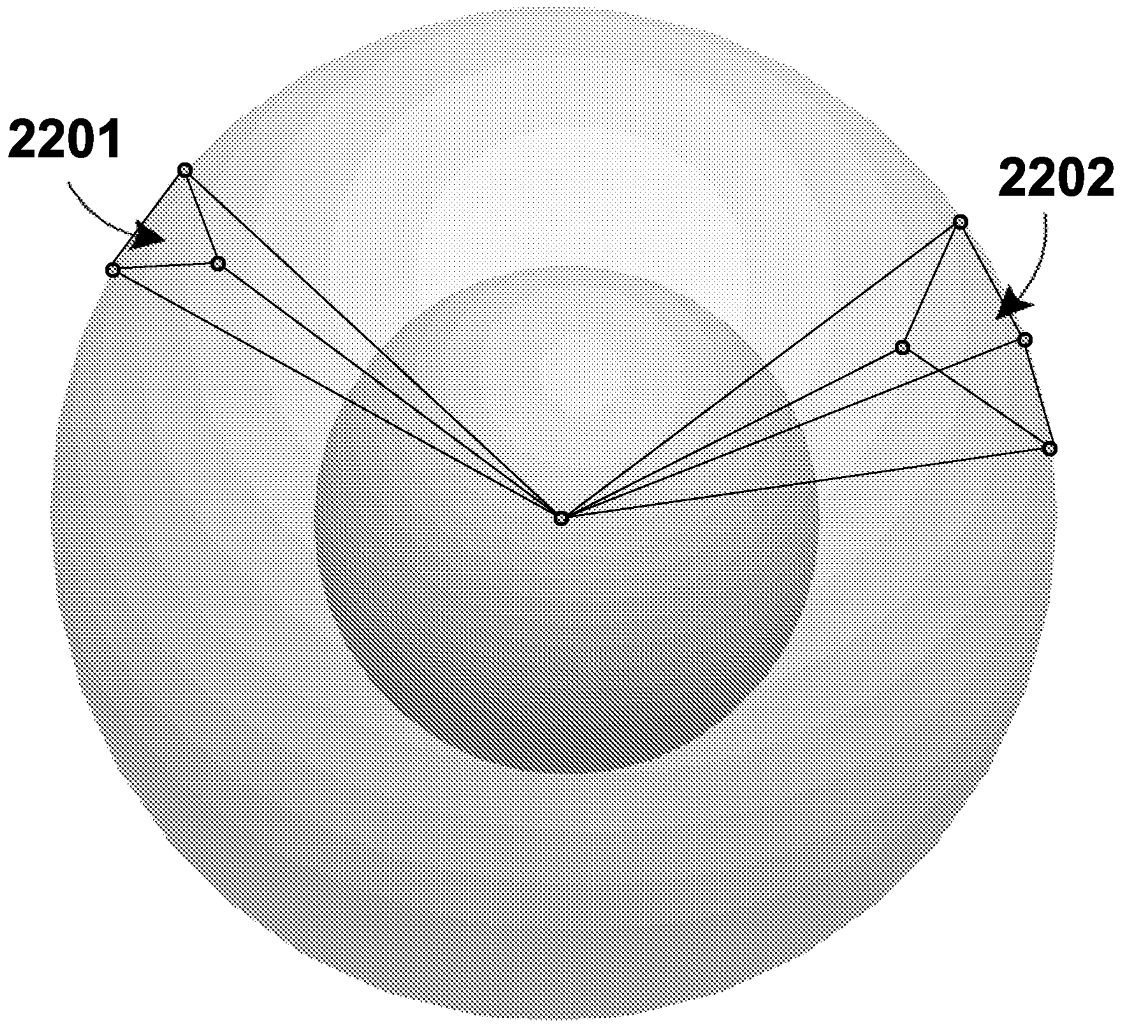


FIG. 23

Diagram of rigid containers and their relationship to surface communities

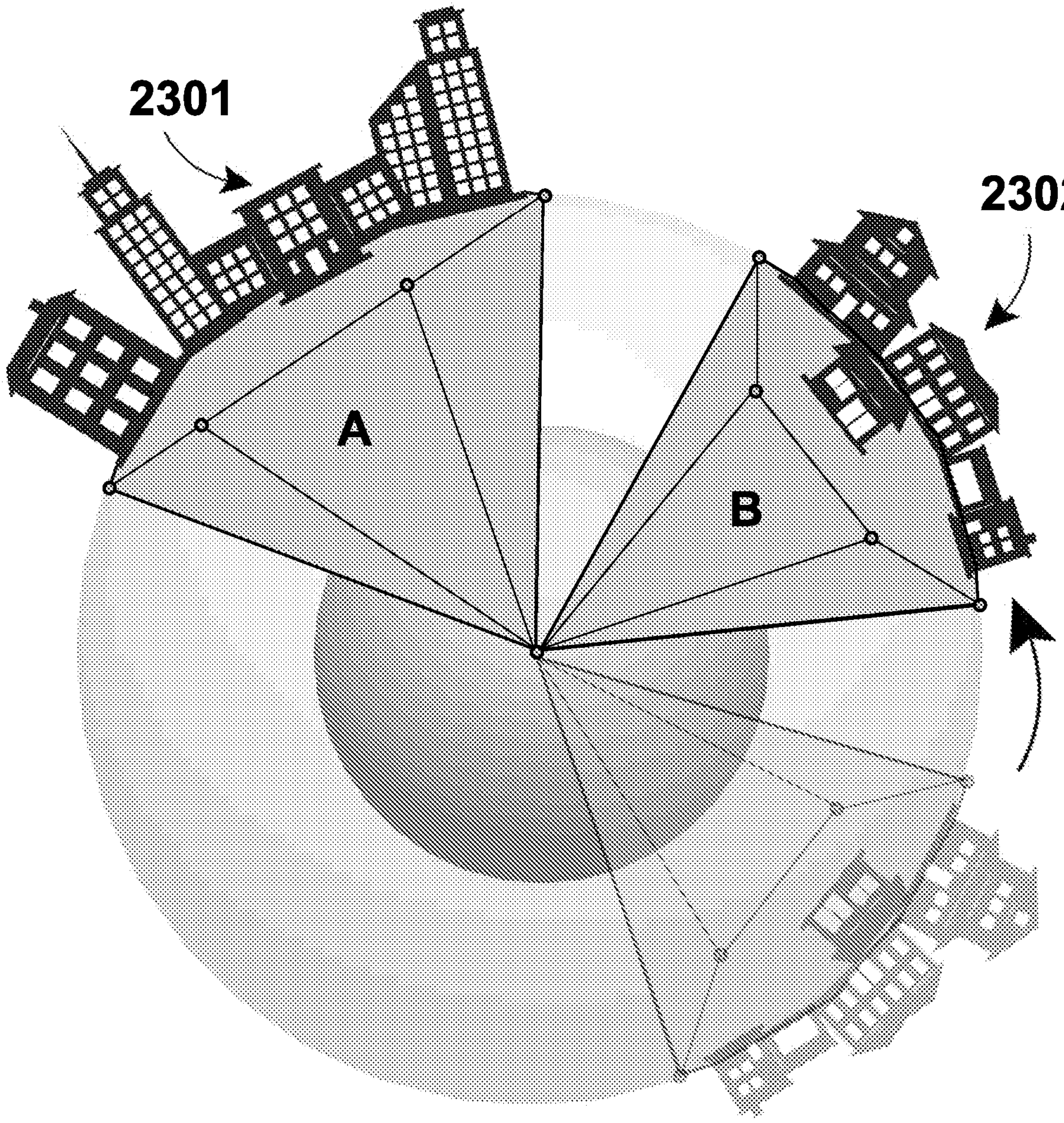


FIG. 24

Inter-community diagram showing synergistic data relationships and exchanges

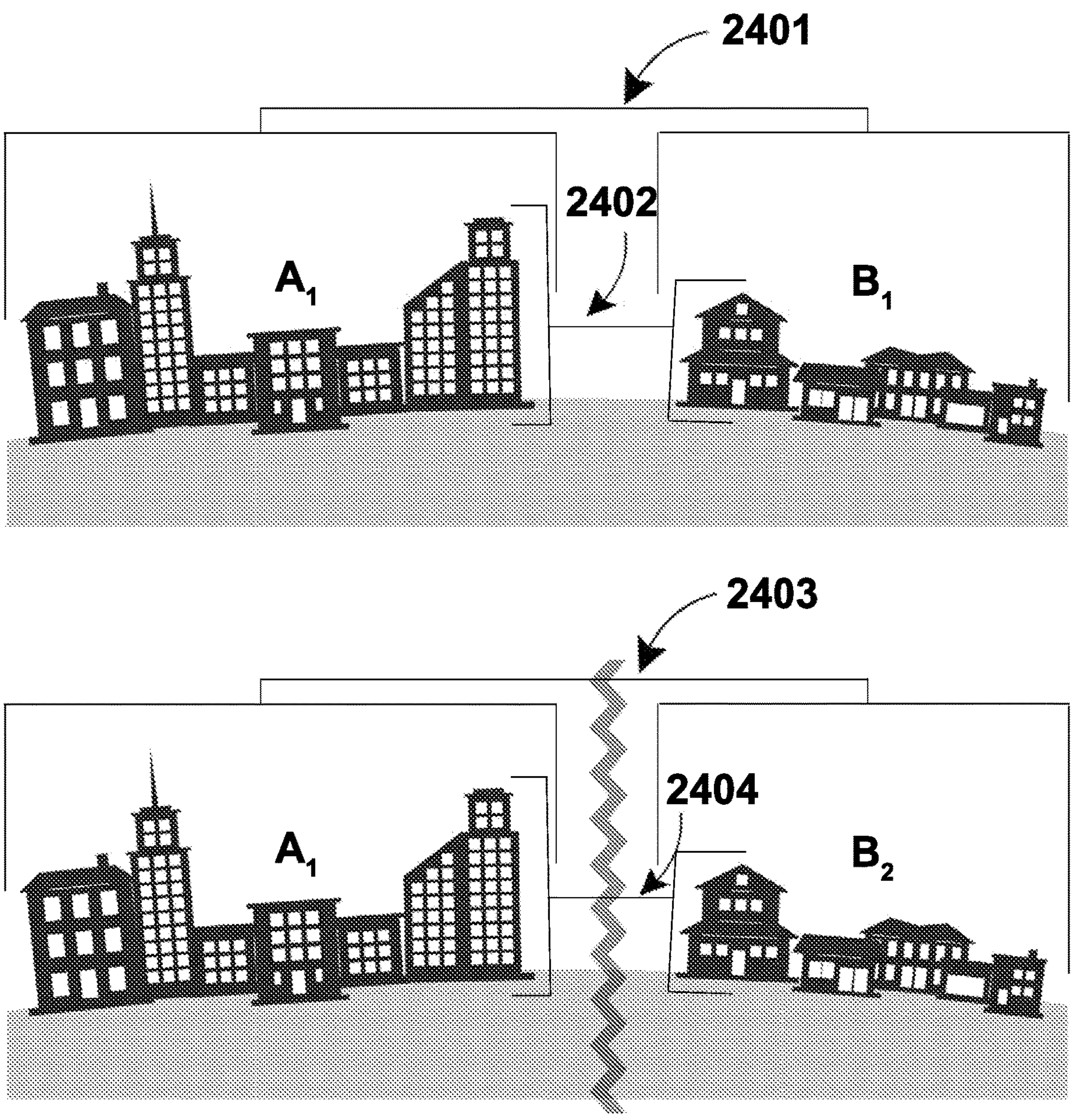


FIG. 25

Intra-community diagram showing data visually represented as particle systems

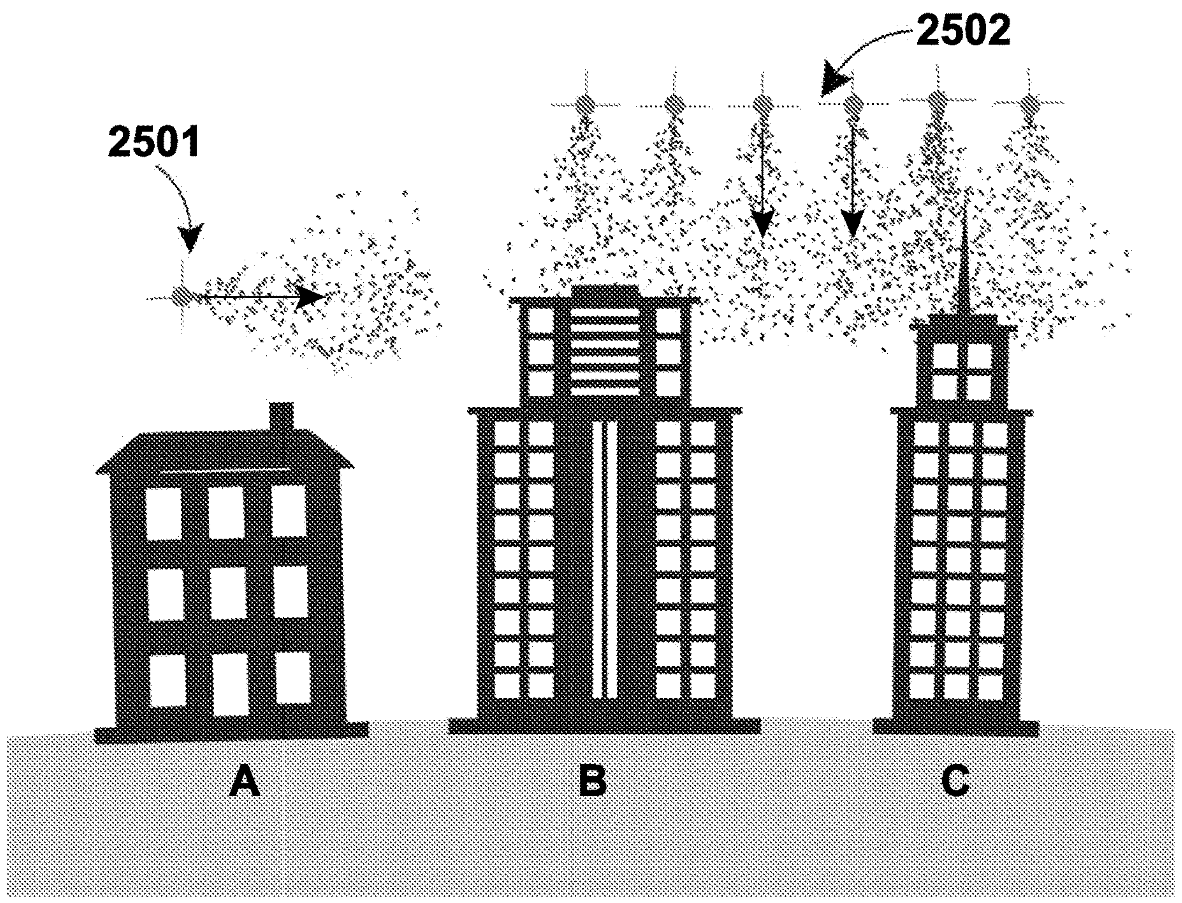


FIG. 26

Sphere of Influence example when enclosing a polygon based social community and the sub-surface relationship to any connected rigid containers

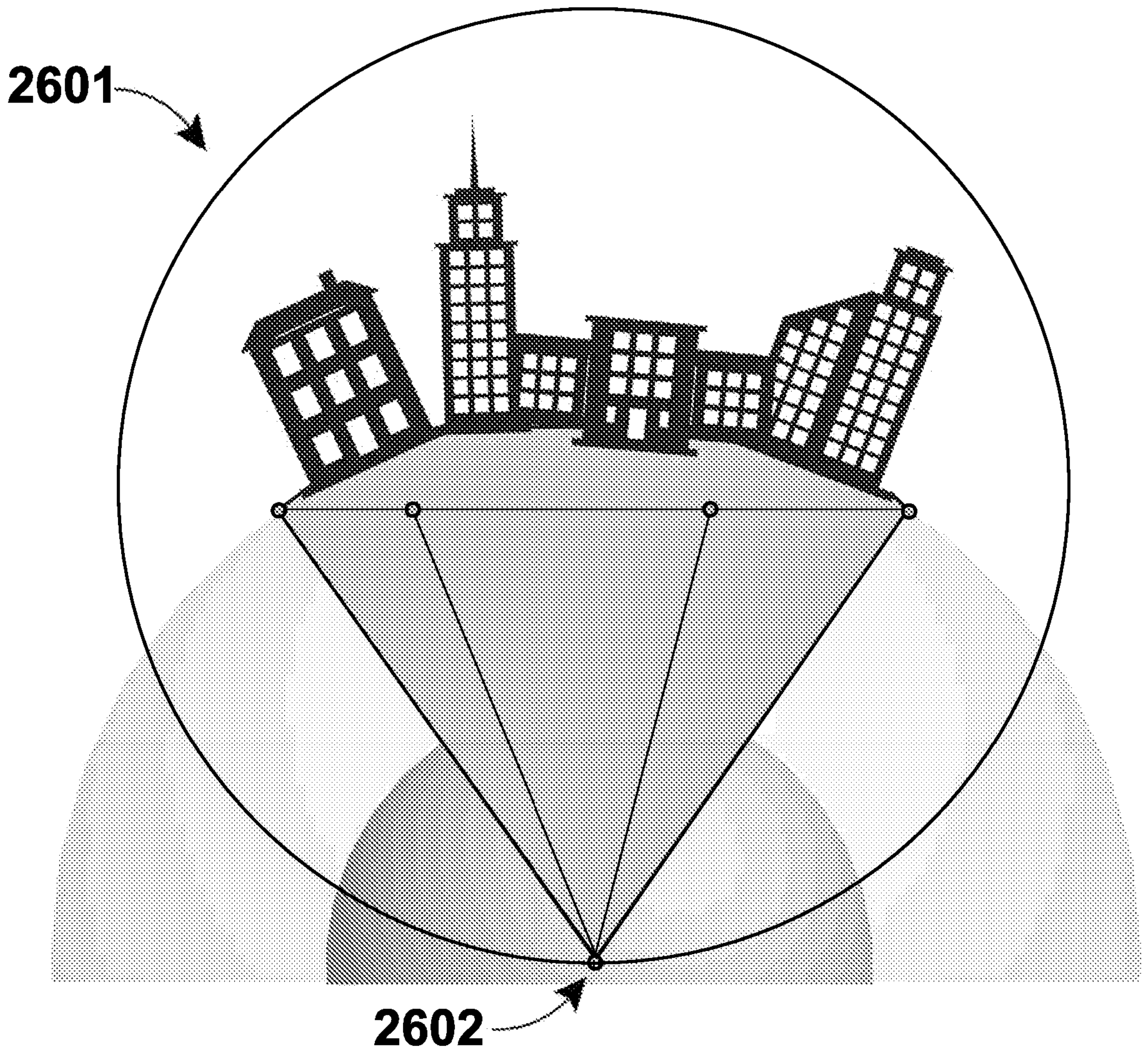


FIG. 27

Immersive Corollary Library Engine (ICL)

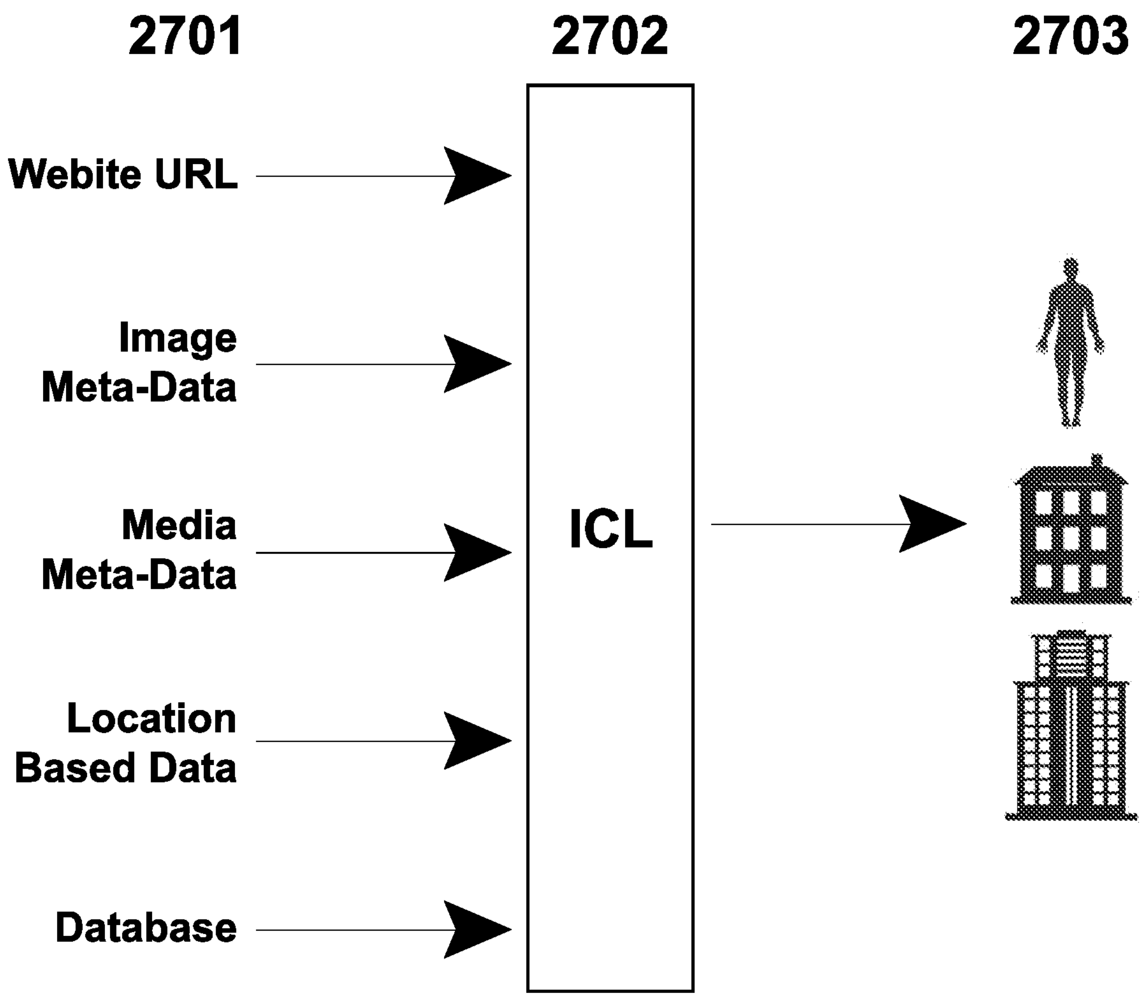


FIG. 28

Immersive Corollary Library Tethering

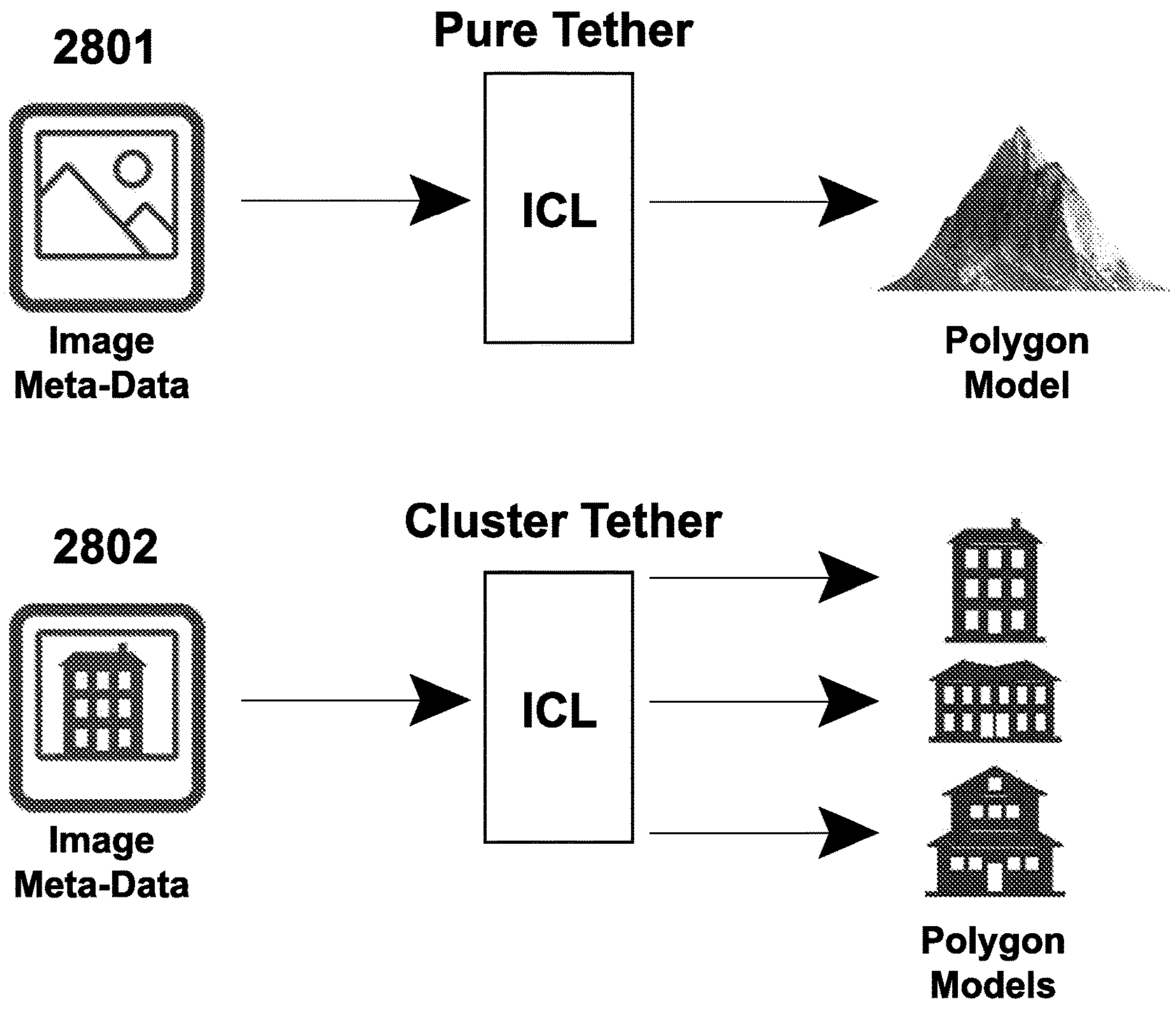


FIG. 29

Vector Addres and Object to URL Tethering

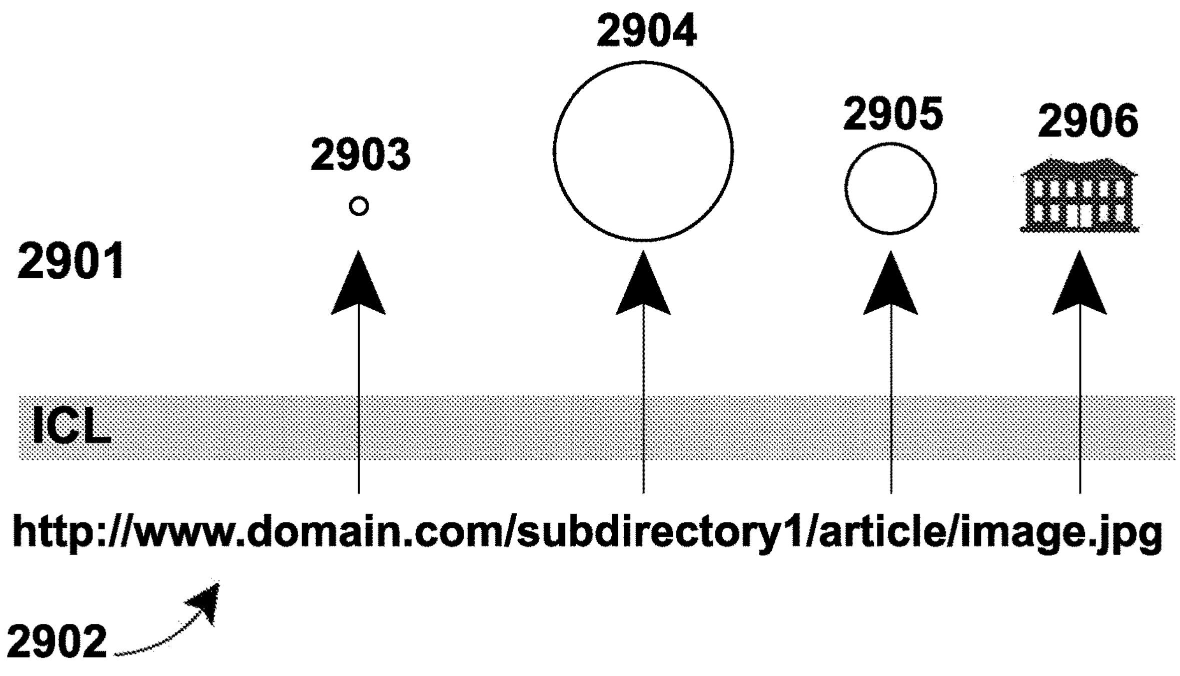


FIG. 30

View of two respective user containers and their distinct vector addresses

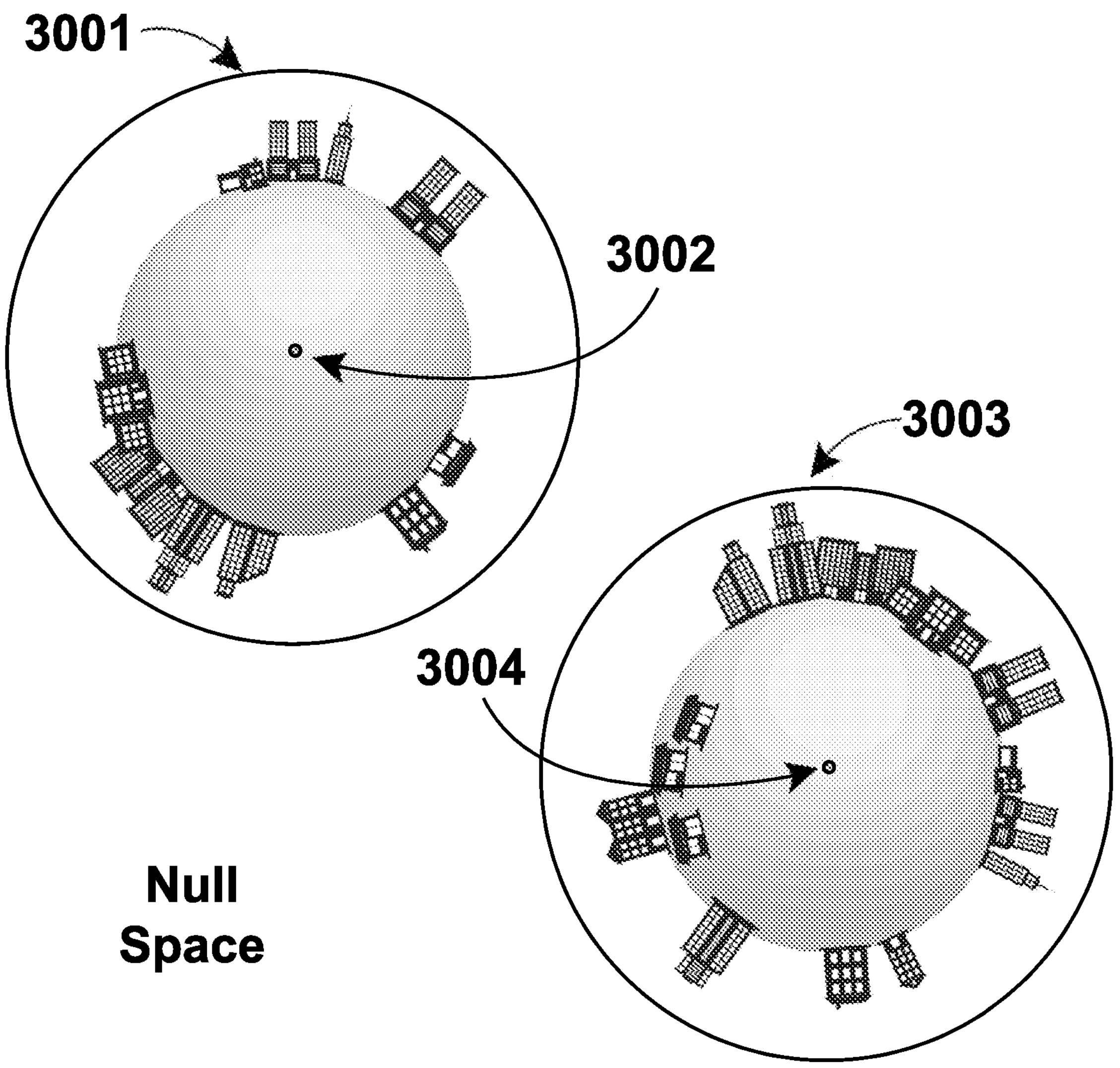


FIG. 31

Point-to-point methods of transportation

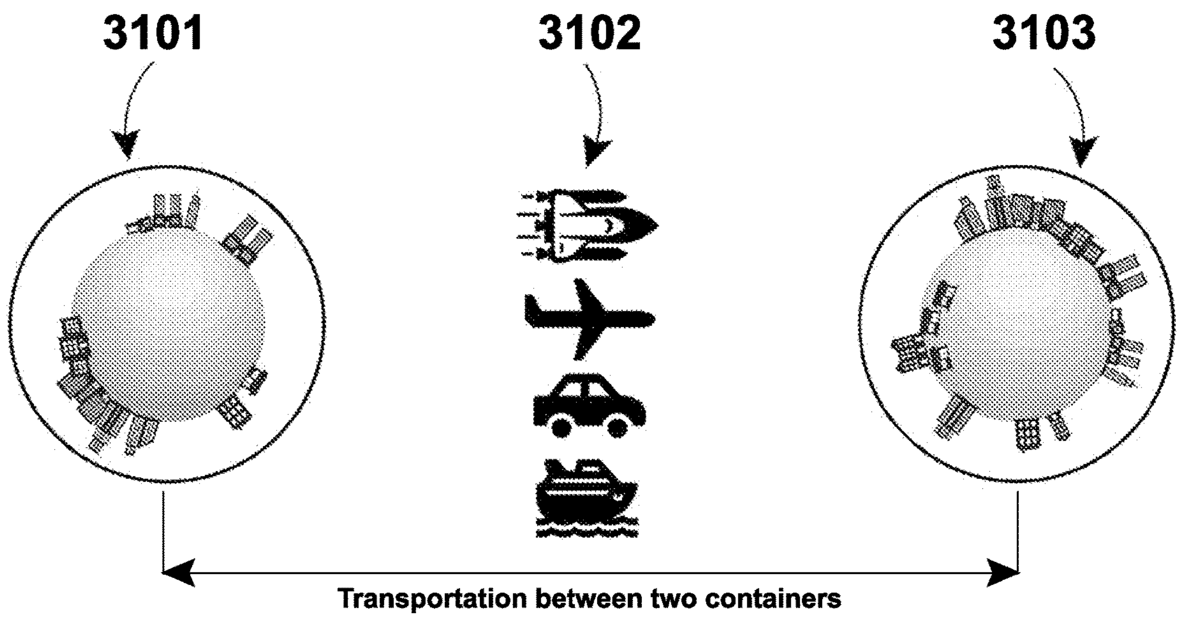
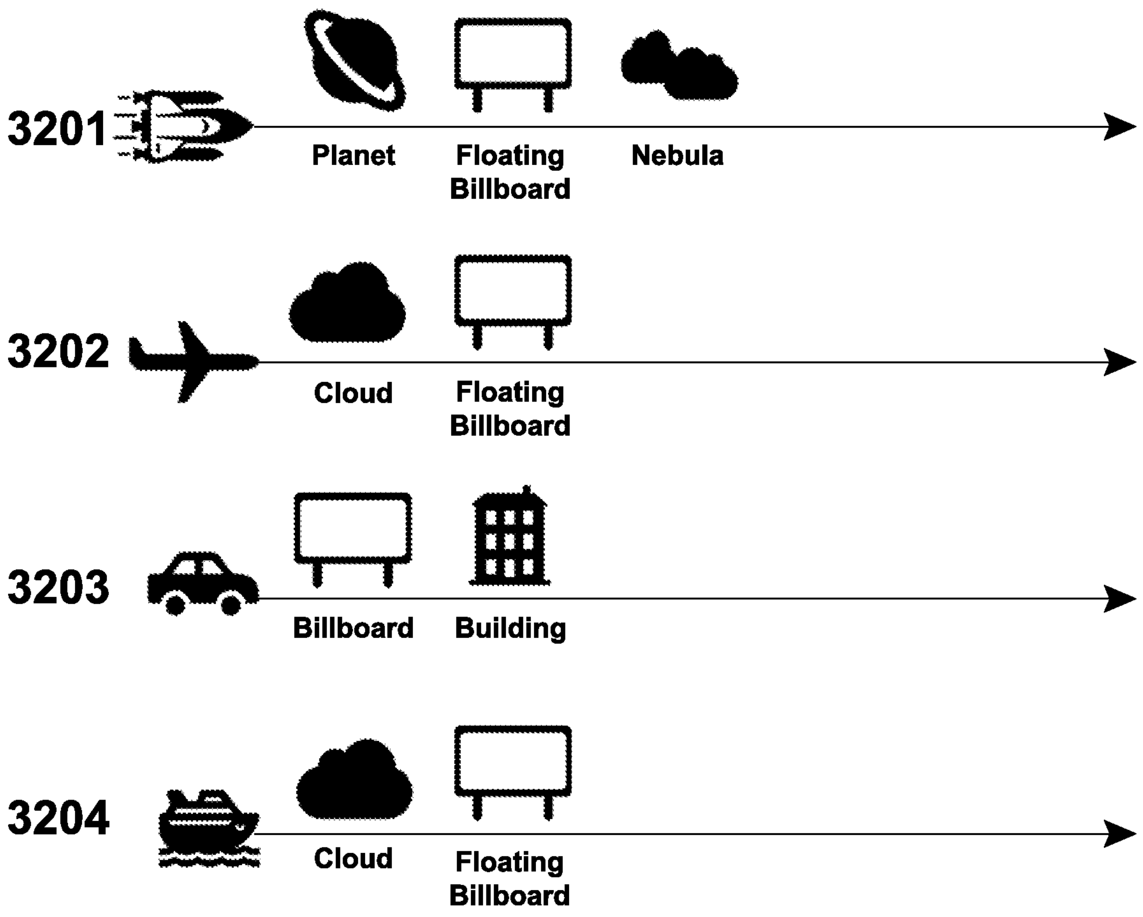


FIG. 32

Advertising during virtual transportation



VOLUMETRIC VECTOR NODE AND OBJECT BASED MULTI-DIMENSIONAL OPERATING SYSTEM

PRIOR APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 15/451,047 filed Mar. 6, 2017, entitled VOLUMETRIC VECTOR NODE AND OBJECT BASED MULTI-DIMENSIONAL OPERATING SYSTEM" which is a continuation of U.S. patent application Ser. No. 14/256,530 filed Apr. 18, 2014, entitled VOLUMETRIC VECTOR NODE AND OBJECT BASED MULTI-DIMENSIONAL OPERATING SYSTEM" which claims priority to U.S. Provisional patent application No. 61/814,177, entitled "Vector Node and Object Based Multi-Dimensional Operating System" filed Apr. 18, 2013, all of which are hereby incorporated by reference herein in their entirety.

BACKGROUND OF THE INVENTION

As data usage grows, and users have a myriad of ways to control and visualize their data, including social networking, video games and educational or other such environments, there is no single method to consolidate data into a tactile graphical interface which not only connects their data but connects their relationships to each other. There are millions of applications, programs, websites, search engines, social communities and other related and unrelated technologies, applications, platforms and content that are currently disparate and the only overall connection between them is when a user manually makes a connection via search engines or other form of social connection. With the advancement of mobile technology and wireless data exchanges, there is no one single point-of-entry to access all of this information in a tactile, immersive social environment.

BRIEF SUMMARY OF THE INVENTION

In a preferred embodiment, the invention includes an overall virtual universal container known as the master volumetric operating container, or "SoftSpace," that sets the finite end points, which can infinitely expand, at which virtual and visual representations of data cannot move beyond. This immersive virtual operating system, or operating container, ingests data from any existing source (for example web, intranet, extranet, local, remote, or any other form of data communication and exchange) through an immersive corollary database that makes a one-to-one connection between the object or meta-data as it exists in its current incarnation, and links it to a vector based three-dimensional model or models that correlate to the type of object being represented.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. **1** Diagram describing the absolute volumetric operating container as it exists within a present timeline.

FIG. **2** Flowchart diagram of the Core Software Engines: 1) Sphere of Influence, 2) Universe Engine, 3) Immersive Corollary Library, 4) Data Visualization Engine and the 5) Inter/Intra-Spatial Marketing and Product Engine.

FIG. **3** is a diagram of a basic container utilizing the Sphere of Influence engine.

FIG. **4** is a deeper nested view of how the Sphere of Influence container is calculated from a macro to micro perspective.

FIG. **5** Illustration of a typical user's volumetric container including visual representation of a user's Core Vector, Core and Node.

FIG. **6** Illustration of user's node and Sphere of Influence volume calculations.

FIG. **7** Diagram of the Sphere of Influence container security protocols as they relate to a parent container.

FIG. **8** Diagram of the Sphere of Influence container security protocols as they relate to the Operating Container.

FIG. **9** Examples of the interaction between two or more users' Sphere of Influence security protocols and the acceptance or denial of data between any user's containers.

FIG. **10** Diagram of interaction between outside data, including advertising, and how users can control the permeation of information layer by layer.

FIG. **11** Diagram of container data states as they relate to the combined state of two or more volumetric data containers.

FIG. **12** Diagram of container relationships via Vector Node addressing on both a linear present timeline and multi-dimensional timeline shift.

FIG. **13** Macro diagram of Universe Engine with distinct Vector Based Addressing System based on absolute center of (0,0,0,0) PRIME.

FIG. **14** Diagram of Parent/Child relationship between Vector Nodes and Sphere of Influence creating a distinct meta-data wrapper for each vector node address.

FIG. **15** Diagram of vector data with event triggers within a single linear timeline.

FIG. **16** Diagram of Vector and Pixel Movement influenced by other forces of data in X, Y and Z space.

FIG. **17** Diagram of usage of intersecting vector data and the creation of new vector data and corresponding volumetric containers.

FIG. **18** Diagram of multi-dimensional vector data with time spirals.

FIG. **19** Diagram and calculations for inter-vector nodes between two (2) or more containers on the same dimensional plane.

FIG. **20** Diagram and calculations for inter-vector nodes between two (2) or more containers on different dimensional planes.

FIG. **21** Structure diagram of a user's typical container.

FIG. **22** Diagram of rigid containers.

FIG. **23** Diagram of rigid container relationship to Terrene surface with clustering as communities when mapped against sphere or container.

FIG. **24** Illustration of Terrene surface social communities and synergistic data relationships between those communities in both a linear timeline and multi-dimensional timeline.

FIG. **25** Illustration of intra-community data represented as particle systems.

FIG. **26** Illustration of Sphere of Influence example when enclosing a polygon based social community and the subsurface relationship to any connected rigid containers.

FIG. **27** Diagram showing threaded or "tethered" connections through the Immersive Corollary Library engine.

FIG. **28** Diagram showing pure-tethers and cluster-tethers and how that data is parsed through Immersive Corollary Library (ICL).

FIG. **29** Diagram showing the connection between user's core vectors, nodes and containers with tethered web URLs.

FIG. **30** Illustration showing the view of two respective users' nodes and their distinct vector address.

FIG. **31** Diagram showing point-to-point methods of transportation.

FIG. **32** Illustration example showing various advertising embodiments during transportation.

DETAILED DESCRIPTION OF THE INVENTION

The inventive subject matter provides a means to dynamically re-draw current and future intranet, extranet, internet, legacy network or any other threads and data into an immersive tactile user interface, or volumetric operating system, which can also be represented in a number of visual formats. The master architecture of this system, or Volumetric Operating Container, as referenced in FIG. **1**, describes the absolute container (**100**) which is the outermost constantly expanding barrier in which all data is visualized. At the absolute center of the volumetric operating container is the Prime Vector (**101**), which is always represented as an XYZ coordinate with a time (T) signature variable:

(XYZT) or (0,0,0,0) PRIME

This vector is the same on all multi-dimensional timelines. This creates the starting point for a distinct volumetric addressing system where three (3) coordinates and a time signature create the address. Since the operating environment can span across multiple visual and computed dimensions, the PRIME address always stays the same.

FIG. **1** represents an initial dimension, or plane, where a single layer (**102**) represents a simple linear time sequence of data events. Any unused, or null (**103**) data is held as possible future volumetric space to be utilized.

Initially there are five core software engines that work in unison to form the architecture of this operating system as referenced in FIG. **2**. For example: Sphere of Influence (soi) (**201**), Universe Engine (**202**), Immersive Corollary Library (ICL) (**203**), Data Visualization Engine and the (**204**) Inter/Intra-Spatial Marketing and Product Engine (**205**). The Volumetric Operating Container (**206**) is the combined software apparatus that binds the software engines into a unified operating system.

Much like the Volumetric Operating Container, users can obtain an XYZ coordinate, or address, with a specific volumetric area around their core vector (CV) known as the Sphere of Influence. These addresses can be obtained by various methods including, but not limited to leasing, renting, registering, purchasing, subscribing or inheriting. FIG. **3** outlines the simplest structure of a user's container where the Outer Sphere of Influence (**300**) represents the outermost structure that holds a user's volumetric information. This volume can be expanded based on how much virtual space each user obtains. At the absolute center of each user's container is the Core Vector (**301**), which is a distinct address identifier. Distance (**302**) from a user's Core Vector (CV) to the Outer Sphere of Influence is calculated using the three dimensional Euclidean distance equation:

$$d(p,q)=\sqrt{(p_1-q_1)^2+(p_2-q_2)^2+(p_3-q_3)^2}$$

Each distinct vector address will include additional meta data that creates a distinct address which only that destination will have, identified with an XYZ address where the distance to that vector from (0,0,0,0) PRIME is calculated by:

$d(p,\ q)=\sqrt{(p_1-q_1)^2+(p_2-q_2)^2+(p_3-q_3)^2}$, where "p" represents (0,0,0,0) PRIME and "q" represents a user's Core Vector.

Multiple Spheres of Influence can exist within a user's container. Referencing FIG. **4**, Spheres of Influence nest within each other creating a multi-layer, multi-directional hierarchical management system which is visually implemented through spheres and/or polygon based containers. From a data and visual control perspective, The Outer Sphere of Influence (**401**) is the outermost control layer in which user has absolute control over the volumetric content or information within this container. The Inner Sphere of Influence (**402**) is the closest in distance to the user's Core Vector. Between these two containers are the Interim Spheres of Influence (**403**) which represent all additional containers that exist between the outer and inner spheres. Distance from a Core Vector (**404**) to the surface of any Sphere of influence uses the Euclidean distance equation as is calculated as follows:

$d(p,\ q)=\sqrt{(p_1-q_1)^2+(p_2-q_2)^2+(p_3-q^3)^2}$, where "p" represents the Core Vector and "q" represents any Interim Sphere of Influence.

FIG. **5** illustrates the visual implementation of a typical user's volumetric container where there is an absolute center, or Core Vector (**501**). From center outward, the first container is the core (**502**), the most secure container which is used as a personal data storage mechanism. The Terrene (**503**) is the primary physical container which is visually represented as a solid surface. The Terrene Surface (**504**) is the primary mapping surface in which a user can place polygons or other data that is represented as three-dimensional models. The Sphere of Influence (**505**) is the outer visual container.

Since each user's container occupies a specific amount of volumetric space, FIG. **6** illustrates calculations for the following containers:

Core Volume (601):$(CV)=\frac{4}{3}\pi r^3$

Terrene Volume (602):$(TV)=\frac{4}{3}\pi r^3-(CV)\frac{4}{3}\pi r^3$ which represents a boolean value

Sphere of Influence Volume (603) $(soiV)=\frac{4}{3}\pi r^3=((TV)\frac{4}{3}\pi r^3-(CV)\frac{4}{3}\pi r^3)$ where both (TV) and (CV) create a boolean expression from the (soiV) volume

Each container or layer has distinct security filters and protocols as they relate to a specific user or user's container. Users have control over data or objects that permeate any of their containers, or spheres, by enabling, disabling or adjusting security protocols for each layer. FIG. **7** illustrates a semi-spherical cross section showing different security layers, where the path of data (**701**) begins outside of the containers and then moves inward towards the Core Vector (CV). The outer security layer (**702**) represents the outermost barrier for data to enter the Sphere of Influence (soi). The interim sphere's security layers (**703**) can have multiple values allowing some information to pass through while disallowing specific data to pass. The Terrene security layer (**704**) allows or denies any objects to be embedded on the Terrene surface, which includes any advertising or outside polygon models that are not sourced directly through the user. The core security layer (**705**) is the most secure area of all of the containers, holding sensitive or critical user data. For example: credit card numbers, bank information, passwords and any other sensitive data.

User containers, centered on a distinct Core Vector (CV), inherit the operating container's security protocols outside of the user's Sphere of Influence (soi). FIG. **8** illustrates the relationship between the operating container (**801**) and the user's container (**803**), as well as the operating containers security protocols (**802**) which take priority over all security protocols outside of a user's Sphere of Influence (soi).

Interaction between two (2) user's Spheres of Influence, as illustrated in FIG. **9**, can have an orbiting relationship (**901**) where there is no physical collision or interactivity between the containers. When container do intersect (**902**), pre-set security protocols, as defined by user, determine how much data is accepted or denied. In this example, user A can set their containers to restrict encroachment of user B (**903**). When allowed, a combined container (**904**) is created with mixed data from both users. In the case of hierarchical control where a specific user, say a parent, wants to limit and set security protocols for their child, they can do this via nesting security controls within their container, or creating a new managed security container whenever warranted.

Outside data, meaning any data that is not inherently contained or protected within a user's Sphere of Influence (soi), may include advertising and other forms of information that attempt to permeate a user's container layer by layer. FIG. **10** illustrates user controls over data that is sourced outside of their Sphere of Influence (soi), and how advertising and products are allowed to visually be shown and interact with user's data. Products, advertising and services (**1001**) can only permeate the layers that a user has allowed them to. Once within the sphere, outside data is connected to a set of three-dimensional polygon models which are visually drawn to screen. Users can allow specific products or companies to permeate specific layers (**1002**). Outside data is also given security protocols based upon what the individual wants. For instance, a user may wish to prohibit specific advertising of products, while at the same time, allowing data such as home security, to permeate all the way into their core.

Multiple data states can be created depending on how two or more containers interact. These containers can include data sources that were generated through the operating container or through user containers. As illustrated in FIG. **11**, the combined state of data is consistent through the entire operating container, and can include a user's Sphere of Influence, data spheres/containers, product data or polygons and any other volumetric container. The merge state (**1101**) is where data from two or more containers (**1101**$_1$) merge, creating a new data container (**1101**$_2$). An example would be a data container of genealogy would be accepted, in its entirety, into a person's personal container. The reflect state (**1102**) is where data from two or more containers (**1102**$_1$) reflect off each other, creating a new data trajectory (**1102**$_2$). An example would be preventing specific restricted content types from entering your child's container. The refract state (**1103**) is where data from two or more containers (**1103**$_1$) partially merge, creating a new larger data container (**1103**$_2$) and a smaller residual data container (**1103**$_3$) from information that is not absorbed into the larger container. An example would be a community data container for racecar fans and a container with data of their favorite driver. The new larger container (**1103**$_2$) would create a more focused community of information on the sport and the driver. Whereas the smaller residual container (**1103**$_3$) would carry any unwanted data away.

Data containers, and the visual representation of data as three-dimensional polygons, can exist on both linear and multi-dimensional timelines. This allows users to have multiple sensatory representations or experiences of their data, including visual, aural, tactile, smell and taste and any other sensatory functions that may be discovered. FIG. **12** illustrates container relationships and addressing on both a

present linear timeline and a multi-dimensional timeline. Either a user's core vector or vector node (vN)(**1201**), which is a distinct address at the core of all non-user containers, can have different values based on their position both in time and space. The relationship of (0,0,0,0) PRIME (**1202**), or prime vector, to the entire data container, or vector node (vN), can change based on different states of the data or position of the vector (**1204**). For example, the relationship between the Earth and the sun over a period of time. The address identifier string changes its time variable based on the relationship to the container's initial position:

Vector Node Position (**1205**$_1$)=$(vN)_1(XYZTp)_1$ with multiple states on a single timeline where the properties of the (vN) change with time (**1205**$_2$, **1205**$_3$ and **1205**$_4$).

Containers can exist in multiple states where the XYZ position and address is always consistent, and the planar (p), or dimensional, view has changed. (**1206**$_1$) and (**1206**$_2$) show a changed (vN) planar state to where the container exists on both a secondary and tertiary plane:

Plane **2** (**1206**$_1$)=$(vN)_1(XYZTp)_2$, Plane **3** (**1206**$_2$)=$(vN)_1(XYZTp)_3$

A user's core vector cannot change its position once it has been addressed, unless the core vector is intentionally repositioned.

FIG. **13** illustrates the Universe Engine, which is the vector based addressing system which manages all data points within the operating container. (0,0,0,0) PRIME (**1301**) is the absolute center of the operating container. This position of this central vector is identical across all planar (p) or multi-dimensional views. The distance calculation (**1302**) uses the three dimensional Euclidean distance equation, $d(p,q,)=\sqrt{(p_1-q_1)^2+(p_2-q_2)^2+(p_3-q_3)^2}$, where (p) is (0,0,0,0) PRIME and (q) is the core vector (**1303**) of a user or data container. Each core vector (CV), within the operating container, is always the hierarchical parent to all attached containers, or Spheres of Influence, when dealing with addressing or movement of data. Null space (**1304**) is defined as any unused volumetric data space outside of any user or data container.

Vector nodes (vN), as illustrated in FIG. **14**, show the (vN)(**1401**) as having a child hierarchical relationship to the Core Vector (CV) (**1402**). Users may have multiple vector nodes (vN) within their Sphere of Influence (soi). Multiple vector nodes (vN) are represented as:

$(vN)_1$, $(vN)_2$, $(vN)_3$, $(vN)_4$, . . .

Vector nodes (vN) can have either a direct node connection (**1403**), in which the data path or linking of (vN) is direct to the core vector (CV), or a secondary node connection (**1404**), in which the data path or linking is between two vector nodes. These would be represented as $(vN)_1$ and $(vN)_2$. All distances between any (CV) and (vN) are calculated using the same Euclidean equation:

$$d(p,\ q,)=\sqrt{(p_1-q_1)^2+(p_2-q_2)^2+(p_3-q_3)^2}.$$

Data movement, within a single dimensional timeline, can be visually represented at different vectors points depending on event triggers that can shift data from one position to another. All vector nodes (vN) that have a migratory path, or any other representations of vector and/or addressing data within the operating container follow the parameters as set forth in FIG. **15**. Data sets will always have an initial vector data position (**1501**). Once a data set begins movement, it starts an array of trans-events (**1502**) where vector data migrates and from one point in time to another, and one point in space to another, while staying on the same dimensional plane. These vectors are directly connected to pixel data, or a visual pixel, and are represented as transition pixels (tp). The alternate position of the data and/or pixel is represented as (AP). Together (tpAP) represents the transitional identifier vector data as it relates to visual pixels. (**1503**) represents the alternative data position as it relates to the initial vector data point. When dealing with multi-dimensional or multi-spatial migrating data sets, (**1504**) illustrates a transecting data set sourced from another path. While these examples represent pixels and visuals, the data movement can also represent any sensatory data.

Vector and pixel movement, within a single dimensional timeline, can be influenced by forces of data in the X, Y and Z space. FIG. **16** illustrates vector data, as visually represented by a pixel, as having inherent states of movement, including velocity and trajectory. These states can be influenced by outside data, creating new alternative vector data paths. From the initial vector point (**1601**) to the vector in movement state (**1602**), outside data forces (**1603**) can shift the intended path to have a more organic movement that can be visually represented as pixel data. An example would be a data container holding a specific feature film where the outside data forces could be containers of critic's reviews.

Vectors and data sets that have migrating paths may intersect as illustrated in FIG. **17**. The intersection of vectors (**1701**) pertaining to information, conversations or relay of data between three or more users creates a new vector node (vN) with a distinct address and tracking data (**1701**). Data outside of this information, conversation or relay of data from another user or source on a different path, can create another distinct vector node (vN)(**1702**). An example would be three (3) users having a conversation about a medical procedure and a forth (4^{th}) user conversation separate from the current conversation, is searching for information about a naturopathic solution.

Within the Operating Container, vector data not only has states of motion, but also multi-dimensional time states for both forward and reverse data. This system uses time lookup tables, allowing data and vectors to jump from one dimensional state to another, as well as from one time to another with different trajectory and velocity. FIG. **18** illustrates the concept of a time spiral effect from future and past vector points as they relate to multi-dimensions, and how that data is drawn through multiple planes. When starting with actual space and time (**1801**), data can migrate dimensionally by way of changing the data from the past to represent a new future timeline (**1802**). This is accomplished through reverse time lookups (**1803**) which begins a data loop where meta-data is tracked and rendered to screen in a new plane or dimensional view. This means that if the past time, as it relates to data, is changed, then a new alternative timeline is created, in essence creating a new dimensional view as well. For example, if a user, within virtual space, wants to go back in data history and discovers and inefficiency in a process, they can alter the data at that point in time, which would create a new timeline.

When two (2) or more containers communicate or transfer data on the same dimensional plane, an inter-vector node (iVN) is created. As illustrated in FIG. **19**, the calculation to determine the vector address position (**1902**), as it relates to both the PRIME vector (**1901**) and two containers (A & C) is:

Inter-vector Node $(iVN)=A(XYZTp)_1 \cap C(XYZTp)_1$

The calculation for inter-vector nodes between multiple containers is:

Inter-vector Node $(iVN)=A(XYZTp)_1 \cap B(XYZTp)_1 \cap C(XYZTp)_1$

When two (2) or more containers communicate or transfer data on different dimensional planes, an inter-dimensional vector node (idVN) is created. FIG. **20** illustrates the connections and calculations to create an unique address identifier across multiple planes as it relates to the PRIME vector (**2001**). Where the (idVN) between containers A & C can be calculated as follows:

$$\text{Inter-dimensional Vector Node (idVN)}=A(XYZTp)_1 \cap C(XYZTp)_3$$

Calculation of the (idVN) between multiple containers (A, B & C) can be calculated as follows:

$$(idVN)=A(XYZTp)_1 \cap B(XYZTp)_2 \cap C(XYZTp)_3$$

The structure of a typical user container, as illustrated in FIG. **21**, always has an absolute center point, or core vector (CV) (**2101**). The core (**2102**) is the most central and secure user data container. The Terrene (**2103**) is the user container that is typically represented as visually solid surface. The Terrene surface (**2104**) is the mappable area in which communities and polygons are attached, which may include object anchored but not attached to the surface. Users can also build sub-Terrene structures, at least to the outer extent of the core, communities or polygon based objects. The outer Sphere of Influence (**2105**) is the outermost point at which a user's data is held and/or visually represented, and can include any objects not anchored to the Terrene surface. And the community (**2106**) which is the surface level grouping of polygons that form social, business and data related communities.

Within each Terrene container are multiple rigid containers as illustrated in FIG. **22**. Each rigid container always has a link to the user's core vector (CV), along with a minimum of three (3) additional surface vectors to form a simple volumetric container (**2201**). Surface containers can also have additional surface points which create more complex surface structures (**2202**).

Rigid containers are used to track and hold volumetric data, in a simpler form, as it relates to the Terrene surface and user generated communities. Surface level content, and or communities, can either stay in a specific position (**2301**) or shift along the surface (**2302**). For example video gamers can create one community where they meet up to strategize, and create another game community which tracks their exploits of the game. The second community would move as they progress through the game.

Data can be synergistically exchanged between communities. Users can populate their Terrene surface with as many communities or polygon objects that will fit within the surface area and volumetric space with the Sphere of Influence (soi) as illustrated in FIG. **24**. Meta-data information is exchanged between the communities, creating data bridges or pertinent information that is contextual to both, or multiple, communities and objects. Inter-community data exchange (**2401**) occurs when two communities exchange data on the same dimensional plane. Inter-object data exchange (**2402**) occurs when two objects exchange data on the same dimensional plane. Inter-dimensional community data exchange (**2403**) occurs when two communities exchange data on different dimensional planes. Inter-dimensional object data exchange (**2404**) occurs when two objects exchange data on different dimensional planes.

Data can also be synergistically exchanged from within a community or Sphere of Influence (soi). This data can be visually represented as a particle system or other methods of visually representing complex data arrays. FIG. **25** illustrates how data can be visually represented by particle emitters, and how the frequency and intensity of that data can change the particle type from one element to another (i.e. from fire to water). Single particle emitters (**2501**) can be attached to any parent polygon or object so that the relevant particle system surrounds the data it represents. Data can also be represented as multiple particle emitters (**2502**) for more complex data sets. For example, an array of servers creating a cloud computing environment can be visually represented as clouds surrounding structures that represent contextual data.

Each community, and/or object, has a Sphere of Influence (soi) which encloses the polygon based communities. FIG. **26** illustrates the relationship of a community based Sphere of Influence (soi) (**2601**) to the core vector (CV), and how the (soi) inherits axial pivoting from the (CV) (**2602**) and also creates another security barrier. Intra-object security can be placed on a floor-by-floor and room-by-room basis. For example a user can give the penthouse of a specific building distinct security protocols, while the remaining building may be open to the public.

The corollary data that populates both the entire operating container is ingested and managed by a dynamic immersive corollary database called the Immersive Corollary Library (ICL). This unique master database and library creates a permanent link, or tether, between a three-dimensional object and a grouping of data, including; images, video, audio, code and real world data (global positioning systems, local positioning systems, motion capture data, tactile interfaces, gesture control). FIG. **27** illustrates the bridge (**2702**) between the web as it exists today (**2701**), gaming consoles and any type of immersive social environment or user interface that requires the translation of flat two-dimensional data into three-dimensional models (**2703**). Data can be extracted from a URLs, php, ajax, JSON, database or any other current or future source of data. Modeled data can be used to populate volumetric containers, communities or any other usage, including devices, of polygon models that have a direct tether to web data.

The tethering process, handled through the Immersive Corollary Library (ICL) has two types of connections as illustrated in FIG. **28**. A Pure Tether (**2801**) is a one-to-one relationship of meta-data to a polygon model. A Cluster Tether (**2802**) is the linking of meta-data from one or more sources to multiple versions of polygons.

Each model or grouping of models has unique meta-data identifiers that create quick exchanges of data between two objects that are within certain proximity of each other, or that are being queried by the immersive search engine. These can be held within a community, any container, a hybrid link between a tethered URL, or any other addressing system, and object, or any other form of direct or indirect bridging between databases or libraries.

Web URLs have a distinct tether hierarchy as illustrated in FIG. **29**. The Immersive Corollary Library (ICL) handles the tethering of URL directories, or any other addressing system, and content with vectors, containers and polygon objects. (**2901**) represents a grouping or community of containers and objects connected to a URL, any other addressing system or domain (**2902**). (**2903**) represents a domain name to vector node (vN) tether. (**2904**) represents a sub-directory to Sphere of Influence (soi) tether. (**2905**) represents a content directory to secondary Sphere of Influence (soi) tether. (**2906**) represents image or content meta-data to polygon model tether.

FIG. **30** illustrates the view of two respective user containers and their distinct vector addresses. Where (**3001**) represents user A's container and (**3002**) represents that user's core vector (CV). And (**3003**) represents user B's container with (**3004**) being that user's core vector (CV).

Within the volumetric operating container, on both single dimensional and multi-dimensional planes, there is are methods of transportation which visually, as well as multi-sensatory, represent point-to-point data transfers and communication. FIG. **31** describes transportation between two points, including container, communities, vector nodes (vN) and any other vector point(s). The visual, and/or sensatory, representations of transportation can either be viewed as first-person or third-person transit. (**3101**) and (**3103**) represent two distinct user containers and (**3102**) represents specific modes of transportation.

Since transportation and data not only becomes a journey for the user, but an immersive experience, advertising, and or sensatory experiences, can be implemented during the data transfer time between peers. FIG. **32** illustrates examples of transportation with advertising, but not limited to, space environment (**3201**), atmospheric environment (**3202**), community or ground environment (**3203**) and water environment (**3204**).

A proprietary immersive search engine allows users to input search queries by text input, a combination of gesture controls, or model based search, or any other type of sensatory interactivity, which is used by combining models to form a meta-data snapshot or a three-dimensional model depth based search to where any objects that are placed in the foreground take precedence over objects that are placed in the background, creating a unified search based on the type of models and their contextual meta-data, as well as their spatial relationship to each other. Search parameters may also include, but not limited to, time, velocity, trajectory and texture. The search results are either represented as highlighted objects or nodes within the backdrop of the universe, a remodeling of the core planet to show the results as three-dimensional model data, text and object descriptors are drawn in the volume of space around the planet, or objects and data are overlaid against any augmented reality viewport or display that allows the operating system to place virtual objects with geospatial data against real-world objects. The immersive search engine will recognize trends and suggest buildings, objects, both visual and implied, or sponsors that can either populate the user's container or augment the search information through paid sponsorship, memberships or other value-add products. All controlled by the user's sphere of influence preferences and how they allow sponsors to permeate each layer of their security protocol.

Any data that is visualized within this operating system will be part of an immersive analytical system, that uses custom algorithms that calculate the velocity of a moving vector within any container or immersive environment, and how that velocity correlates to the sphere of influence and other vectors. A value is placed on the aggregate velocity of any bound data sets so that an analytical figure can be calculated to represent the intrinsic real world monetary value of the movement of the vector and anything attached to it. This creates a means to advertise, and or communicate with a user, based on organic data as well as user sphere of influence preferences.

The more a person communicates with another, the more data that is exchanged or contextual, the closer in proximity that other object or user's container will appear, as if organizing into a community of containers. This same set of boundary identifiers allows users from the core-out management view to choose how many spheres of influence they want, what the security protocols are for each sphere, what data is allowed to permeate which sphere and when, and what users are allowed to access specific data, objects or communities. This security protocol also allows users to block other users from encroaching on a specific neighborhood of spheres. Once two or more spheres have begun to overlap, a new organic volumetric data container is birthed. Through the combined aggregate of all containers within the operating system, a spatial volumetric cost-per-pixel algorithm calculates the actual volume of three-dimensional pixel space surrounding a specific community or property, which is then calculated and a dollar figure is given to that real-estate or asset.

The volumetric operating system is cross-platform, and can include, but not limited to pc, mobile, tablet, gaming console, and all other current and future devices, so that applications and data can be synced across a wide array of technology and distribution modes, as well as giving the user a single unified visually immersive experience. A non-transitory computer-readable storage medium includes optical memory devices (e.g., CD, DVD, HD-DVD, Blu-ray Disc, etc.) semiconductor memory devices (e.g., RAM, EPROM, EEPROM, etc.), magnetic memory devices (e.g., hard disk, drive, floppy disk drive, tape drive. MRAM, etc.) or any hardware storage memory and does not include electromagnetic signal neither carrier wave.

The Data Visualization Engine is a raw data view of the information held within the operating container. This can include, but not limited to, algorithms, equations, vector data, polygon data any and any other visual representation of data or math.

The Inter/Intra-Spatial Marketing and Product Engine is a contextual object oriented system that injects advertisers and manages the intra-spatial and inter-special analytical values that determine the specific real-time value snapshots of data that has been derived organically from the connectivity of all other core engines. This engine bridges real-world data from any source, including, but not limited to, global positioning systems, gesture control, motion control, radio frequency motion capture, reflective motion capture and/or any product tracking mechanism.

The entire operating container, in a dimensional embodiment, will have a "Universe" skin which is a scaled down representation of the known universe. Stellar data is used to create an active volumetric skin where containers, vector nodes (vN), polygons, objects and migrating data sets are represented as, but not limited to, planets, moons, stars, nebulas, galaxies, wormholes, black holes and other stellar objects.

The virtual universe model is the initial visual implementation of the volumetric vector node and object based multi-dimensional operating container. The total view can be changed to fit within a business-to-business solution infrastructure or an application specific user interface (UI). Thus, specific embodiments and applications of the inventive subject matter have been disclosed. It should be apparent, however, to those skilled in the art that many more modifications besides those already described herein are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims.

The invention claimed is:

1. A system for rendering a mixed reality environment comprising:

memory to:

store:

a set of geometric container definitions for an extended reality simulation, wherein each geometric container definition describes a physical location in at least three dimensions, and

metadata describing a set of associations between the set of geometric container definitions and indicators of sets of computing resources,

wherein each set of computing resources is indicated, based on the set of associations, as an authority for providing rendering information inside an associated geometric container; and

a network interface to:

transmit requests, via a network, to a plurality of servers configured to provide mixed reality services,

wherein a first server receiving an indication of a physical location and send, based on a first request, the metadata to the system, and

wherein a second server, indicated by the metadata, receiving a request for rendering information for a geometric container and send, based on a second request, rendering information to the system;

a processor to:

determine a first physical location of a device;

send, via the network interface and based on the first physical location, a request for a set of geometric containers with associated metadata that are within proximity to the first physical location;

determine a first geometric container based on the first physical location of the device;

send, via the network interface and to one or more computing resources based on the associated metadata, a request for rendering information describing the first geometric container, from the set of geometric containers;

receive, via the network interface, the rendering information; and

render, for display and with an appearance that rendered objects are within the first geometric container, the rendering information.

2. The system of claim **1**, wherein the first server is operated by a first entity and the second server is operated by a second entity different than the first entity.

3. The system of claim **1**, wherein a first set of computing resources associated with a first geometric container are to serve a first augmented reality simulation limited to the first physical location within the first geometric container.

4. The system of claim **3**, wherein a second set of computing resources associated with a second geometric container are to serve a second augmented reality simulation limited to a second physical location within the second geometric container,

wherein the second set of computing resources are different than the first set of computing resources,

wherein the second geometric container is different than the first geometric container, and wherein the second physical location is different than the first physical location.

5. The system of claim **1**, wherein the rendering information is based on an augmented reality simulation limited within the geometric container.

6. A computer program product comprising a non-transitory computer-readable storage medium that stores instructions for execution by a processor to perform operations of a location-based rendering system, the operations, when executed by the processor, to perform a method, the method comprising:

determining a first physical location of a device;

sending, via a network interface to a first server an indication of the first physical location, a request for a set of geometric container definitions, for an extended reality simulation, with associated metadata that are within proximity to the first physical location,

wherein each geometric container definition describes a physical location in at least three dimensions, and

wherein the metadata describes a set of associations between the set of geometric container definitions and indicators of sets of servers identified for hosting rendering information for inside associated geometric containers;

storing a received set of geometric container definitions and the metadata;

sending, via the network interface to a second server indicated by the associated metadata, a request for first rendering information related to a first geometric container definition, from the set of geometric container definitions;

receiving, via the network interface and from at least one of the one or more computing resources based on the associated metadata, the first rendering information; and

rendering, for display and with an appearance that rendered objects are within a first geometric container defined by the first geometric container definition, the first rendering information.

7. The computer program product of claim **6**, wherein the extended reality simulation is an augmented reality simulation, mixed reality simulation, or virtual reality simulation.

8. The computer program product of claim **6**, further comprising determining, based on the first physical location of the device, the first geometric container.

9. The computer program product of claim **6**, wherein rendering further comprises processing the first rendering information to provide a first augmented reality simulation.

10. The computer program product of claim **6**, further comprising:

sending, via the network interface and to one or more third servers based on the

associated metadata, a second request for second rendering information related to a second geometric container definition, from the set of geometric container definitions;

receiving, via the network interface, second rendering information; and

rendering, for display and with the appearance that second rendered objects are within the second geometric container definition, the second rendering information.

11. The computer program product of claim **6**, wherein sending the request for a set of geometric container definitions, further comprises sending the request for a set of geometric container definitions to a server operated by a first entity,

wherein sending the request for rendering information, further comprises sending the request for rendering information to a server operated by a second entity, and

wherein the second entity is different than the first entity.

12. The computer program product of claim **6**, further comprising: sending, via the network interface and to one or more third servers based on the

associated metadata, a plurality of requests for rendering information related to a plurality of geometric container definitions, from the set of geometric container definitions;

receiving, via the network interface, responses to the requests for rendering information; and

rendering, for display and with the appearance that rendered objects based on each rendering information from each request are within an associated geometric container definition, the rendering information received based on the requests.

13. The computer program product of claim **12**, wherein rendering further comprises rendering a universe view with at least some of the rendered objects within the geometric container definitions comprising a planet.

14. A method of location-based rendering, the method comprising:

determining a first physical location of a device;

sending, via a network interface to a first server an indication of the first physical location, a request for a set of geometric container definitions, for an extended reality simulation, with associated metadata that are within proximity to the first physical location,

wherein each geometric container definition describes a physical location in at least three dimensions; and

wherein the metadata describes a set of associations between the set of geometric container definitions and indicators of sets of servers identified for hosting rendering information for inside associated geometric containers;

storing a received set of geometric container definitions and the metadata;

sending, via the network interface to a second server indicated by the associated metadata, a first request for the first rendering information related to a first geometric container definition, from the set of geometric container definitions;

receiving, via the network interface and from at least one of the one or more computing resources based on the associated metadata, the first rendering information; and

rendering, for display and with an appearance that first rendered objects are within a first geometric container as defined by the first geometric container definition, the first rendering information.

15. The method of claim **14**, further comprising determining, based on the first physical location of the device, a first registered geometric container definition.

16. The method of claim **14**, wherein rendering further comprises processing the first rendering information to provide a first augmented reality simulation.

17. The method of claim **14**, wherein rendering further comprises:

processing the first rendering information to provide a first augmented reality simulation; and

limiting the first augmented reality simulation to the first registered geometric container.

18. The method of claim **14**, wherein:

sending the request for the set of geometric container definitions, further comprises sending the request for the set of geometric container definitions to the first server operated by a first entity,

wherein sending the request for the first rendering information, further comprises sending the request for the first rendering information to the second server operated by a second entity, and

wherein the second entity is different than the first entity.

19. The method of claim **14**, further comprising:

sending, via the network interface and to one or more third computing resources based on the associated metadata, a second request for second rendering information related to a second registered geometric container definition, from the set of geometric container definitions;

receiving, via the network interface, the second rendering information, and

wherein rendering further comprises rendering, for display, with the appearance that first rendered objects are within the first registered geometric container, and with the appearance that second rendered objects are within a second registered geometric container defined by the second geometric container definition, the first rendering information and second rendering information.

* * * * *