HYBRID MOTION RIDE AND RIDE SIMULATOR VEHICLE

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Abstract

A hybrid motion ride and ride simulator vehicle is realized as an encapsulating and reusable simulation technology roller coaster car that visually encapsulates passengers of the car from the surrounding environment to the car during the normal operation of a roller coaster ride such that only interior components of the car are within the field of vision of passengers. Simultaneously, the roller coaster car's internal simulation technology uses a computer network system to produce video and audio outputs to passengers of the vehicle for presenting an internal simulated ride theme adventure environment, of system variability and reusability, to compliment the car's roller coaster ride motions. Embodiments of the current invention present varying car designs with integrated encapsulating and reusable ride simulator components that each meet the requirements of encapsulating and reusable simulation technology roller coaster car design of the current invention.
HYBRID MOTION RIDE AND RIDE SIMULATOR VEHICLE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of provisional patent application Ser. No. 61/584,665 filed Jan. 9, 2012 by the present inventor.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX

[0003] Not Applicable

SEQUENCE LISTING

[0004] Not Applicable

BACKGROUND OF THE INVENTION

[0005] 1. Field

[0006] The current invention relates to fields of motion rides and ride simulators commonly found in amusement parks and especially in regards to the use of roller coaster cars and ride simulation technology.

[0007] 2. Prior Art

[0008] Roller coaster type rides have been appreciated for about two hundred years as riders have enjoyed viewing large skylines as they fall, climb, and roll with great velocities and strong accelerations up, down, and over hills of ride track. Such adventures, however, are limited in type of ride themes that can be effectively implemented. With desires to explore more fantastical themes, ride simulators emerged as self-contained systems of visual and audio presentations but such systems have proven to be severely limited in their full capabilities of motion movements. For example, the Advanced Technology Leisure Application Simulator (ATLAS) is used for amusement park rides like Disneyland’s Star Tours and EPCOT’s Body Wars developed by the Walt Disney Imagining Company. While these rides present exciting video and audio simulated environments, the motion movements experienced by passengers on these ride simulators have not achieved the velocities and accelerations comparable to roller coaster rides. Furthermore, roller coaster rides have not captured the extensive and excitable video and audio effects of simulated themes and environments created by ride simulators. This has created the problem of a divide between amusement park attendees—"thrill-seekers" often flock to roller coaster rides while virtual-enthusiast riders commonly flood ride simulators. Another issue only worsens the current limited use of roller coaster cars.

[0009] Another key problem in the design of roller coaster cars is the limited practicality of ride theme variability and reusability. Roller coaster rides and cars are routinely built around a single theme. Ride construction and operation are limited by this theme: In contrast, other fields of advanced technologies are thriving on principles of variability and reusability of components and services like object-oriented programming and service-oriented architecture—such implementations are common in the industry of software. These practices of variability and reusability are applicable and highly beneficial to roller coaster rides and cars considering the extensive planning, allocation of resources, time, and cost in designing, constructing, operating, and maintaining these systems. Between amusement park attendees growing accustomed to the repetitive scenarios of roller coaster rides (with such scenery often being narrowly composed of trees, bodies of water, skylines, other park attendees, and parking lots) and roller coaster rides and cars risking becoming outdated and underused within a few years after introduction into the market, it is time for a new direction in roller coaster ride and car design. Furthermore, it is time to recognize and act in response to the limiting motion movement capabilities of modern ride simulators and seek new simulation technology integrations into other applications to capitalize on the full potential of simulator components. The present invention offers an encompassing and unique solution to these problems as discussed in the following sections.

OBJECTIVES & ADVANTAGES

[0010] A hybrid motion ride and ride simulator vehicle is designed as an Encapsulating and Reusable Simulation Technology (ERST) roller coaster car and proposed as an encompassing and unique solution to the current problems in the designs and operations of modern motion rides and ride simulators as identified in the present invention.

[0011] An ERST roller coaster car is a roller coaster car that visually encapsulates passengers of the car from the surrounding environment during the normal operation of a roller coaster ride such that only interior components of the car (including, but not limited to, simulated ride images produced by the car’s internal simulation technology) are within the field of vision of passengers. The normal operation of a roller coaster ride is the period during which passengers are inside an ERST roller coaster car as the car is moving along a ride track of a roller coaster ride while an internal ride simulation system is running so that passengers are simultaneously experiencing motions of the roller coaster ride and presentation of the simulated ride theme adventure. As stated above, the passengers are visually encapsulated from the surrounding environment to the vehicle during this period. This period does not include the act of unloading and loading of passengers as the roller coaster car is both open and not moving during unloading and loading of passengers. Also, the displayed images in the car created by the simulator components can be of real images or artificial images (and in the latter case, being images like those created by computer generated imagery techniques). The ERST roller coaster car’s internal simulation technology also produces audio output to passengers of the vehicle to complement both the car’s internal visual simulated ride theme adventure and the car’s roller coaster ride motions. While the design of encapsulating and reusable simulation technology to roller coaster cars is new, partial integration of non-encapsulating simulation technology into passenger seating is evident as early as audio seat components in U.S. Pat. No. 4,696,370 to Tokumo, Takagi, & Mori (1987) and visual accompaniments in U.S. Pat. No. 5,669,821 to Prather & Headrick (1997). Such modifications for roller coaster cars are non-encapsulating and merely additive to external effects of the surrounding environment to the car (and are limited to the single theme constructed for the roller coaster ride) and therefore do not attain the full array of synergistic effects and benefits (including, but not limited to,
ride reusability, ride variability, and heightened intensity of the ride experience) that are accomplished from using ERST roller coaster car technology.

[0012] There is no indication from designers, manufacturers, or users of motion rides or ride simulators that an integration of encapsulating and reusable simulation technology into roller coasters would be a desired technology. In fact, those in fields of motion rides and ride simulators may argue that combining these two separate technologies in the manner of ERST roller coaster car design is counterintuitive to their original applications. This would be valid reasoning; however, this radical departure from the traditional applications of motion rides and ride simulators is also the great novelty and utility of ERST roller coaster car technology. ERST roller coaster car technology eliminates the weakest effects of both systems by novel and selective integration of components and mechanisms unique to each separate system that results in a final product composed of only the best effects (and with new effects) that overall create a ride experience more intense than what is performed separately by these individual technologies. For example, visually encapsulating passengers from the surrounding environment to the ride vehicle gives ride designers and ride operators control over what passengers see and don’t see during the ride. This creates heightened moments of intensity of the ride experience for passengers that cannot see but can still feel turns, drops, loops, and other dynamic movements of the roller coaster ride. This lack of visual presentation of the surrounding environment to the ride vehicle is replaced by a simulated ride theme that has the new advantages of being variable, reusable, and rich in technological and artistic capabilities that further increase the intensity of the ride experience.

[0013] In conclusion, the present invention replaces traditional motion rides and ride simulators with ERST roller coaster car technology. This new technology goes beyond additive effects of the separate technologies of motion rides and ride simulators and accomplishes synergistic ride experiences and from a greater spectrum of ride theme possibilities relative to the single theme construction of modern roller coaster rides. This is evident in that the individual contributing technologies of ERST roller coaster car technology enhance one another. For example, video outputs and audio outputs presenting a simulated ride theme adventure visually contained inside a roller coaster car enhance the ride motions of that roller coaster car running along a ride track and vice versa. This results in riders experiencing a total ride effect in ERST roller coaster cars greater in intensity than the total ride effect of what is created separately by motion rides and ride simulators. This also creates a heightened sense of realism of the ride experience as riders only see the simulated ride environment and not scenery of the amusement park environment (such as other rides, park attendees, and concrete walkways) surrounding the ride vehicle that otherwise would diminish riders’ experiences. Thus, the synergistic effect of realism is accomplished by simultaneously matching motions of true roller coaster velocities and accelerations of the ride vehicle to the visually encapsulated simulated ride theme adventure.

SUMMARY

[0014] An ERST roller coaster car is a roller coaster car that visually encapsulates passengers of the car from the surrounding environment during the normal operation of a roller coaster ride such that only interior components of the car (including, but not limited to, simulated ride images produced by the car’s internal simulation technology) are within the field of vision of passengers. The normal operation of a roller coaster ride is the period during which passengers are inside an ERST roller coaster car as the car is moving along a ride track of a roller coaster ride while an internal ride simulation system is running so that passengers are simultaneously experiencing motions of the roller coaster ride and presentation of the simulated ride theme adventure. As stated above, the passengers are visually encapsulated from the surrounding environment to the vehicle during this period. This period does not include the act of unloading and loading of passengers as the roller coaster car is both open and not moving during unloading and loading of passengers. Also, the displayed images in the car created by the simulator components can be of real images or artificial images (and in the latter case, being images like those created by computer generated imagery techniques). The ERST roller coaster car’s internal simulation technology also produces audio output to passengers of the vehicle to complement both the car’s internal visual simulated ride theme adventure and the car’s roller coaster ride motions. First, second, third, and fourth embodiments of the current invention present four roller coaster car designs with integrated encapsulating and reusable ride simulation technology that meet the requirements of ERST roller coaster car technology as detailed in the claims. Also, it is remarked that the term “roller coaster car” used in this publication relates to a wide variety of motion rides that achieve ride motions by use of ride vehicles and ride track systems.

DRAWINGS

[0015] FIG. 1 is a perspective left-side view of the first embodiment of an ERST roller coaster car with doors closed for viewing of the ride vehicle from outside of the ride vehicle during the normal operation of a roller coaster ride.

[0016] FIG. 2 is a perspective left-side view of the first embodiment of an ERST roller coaster car with doors open for viewing of the ride vehicle in the state that it is in before and after the normal operation of a ride while it is in unloading and loading mode.

[0017] FIG. 3 is an aerial cross-sectional view of the first embodiment of an ERST roller coaster car for viewing of ride vehicle internal components.

[0018] FIG. 4 is a perspective left-side and cross-sectional view of the second embodiment of an ERST roller coaster car with first row seat removed for viewing of ride vehicle internal components.

[0019] FIG. 5 is a perspective left-side view of the second embodiment of an ERST roller coaster car with doors closed for viewing of the ride vehicle during the normal operation of a roller coaster ride.

[0020] FIG. 6 is an aerial cross-sectional view of the second embodiment of an ERST roller coaster car for viewing of ride vehicle internal components.

[0021] FIG. 7 is an aerial cross-sectional view of the third embodiment of an ERST roller coaster car for viewing of ride vehicle internal components.

[0022] FIG. 8 is an aerial view of an offsite database server system for use by the third embodiment of an ERST roller coaster car.

[0023] FIG. 9 is a perspective left-side view of the third embodiment of an ERST roller coaster car with doors open.
for viewing of the ride vehicle in the state that it is in before and after the normal operation of a ride while it is in unloading and loading mode.

[0024] FIG. 10 is a bottom view of the underside of the third embodiment of an ERST roller coaster car with ride vehicle wheels and electrical contacts for running the ride vehicle over a ride track and collecting power from car-to-track connections during the normal operation of a ride.

[0025] FIG. 11 is a side view of an amusement park ride using an ERST roller coaster car design corresponding to the first embodiment of the current invention.

[0026] FIG. 12 is a side view of an ERST roller coaster car corresponding to the first embodiment of the current invention fitted with ride vehicle wheels for riding over a track system of a ride.

[0027] FIG. 13 is a side view of an amusement park ride using an ERST roller coaster car design corresponding to the second embodiment of the current invention.

[0028] FIG. 14 is a side view of an ERST roller coaster car design corresponding to the second embodiment of the current invention fitted with linear induction motor connecting units for riding along an inverted track system of a ride.

[0029] FIG. 15 is a partial and cross-sectional view of the interior passenger compartment of an ERST roller coaster car design corresponding to the third embodiment of the current invention and showing a simulated ride theme adventure of a snowmobile ride through a snowy mountain range viewed by a passenger on the ride and during the normal operation of a ride.

[0030] FIG. 16 is a partial and cross-sectional view of the interior passenger compartment of an ERST roller coaster car design corresponding to the third embodiment of the current invention and showing a simulated ride theme adventure of a futuristic space battle through space viewed by a passenger on the ride and during the normal operation of a ride.

[0031] FIG. 17 is an aerial cross-sectional view of the fourth embodiment of an ERST roller coaster car for viewing of ride vehicle internal components.

[0032] FIG. 18 is a bottom view of the underside of the fourth embodiment of an ERST roller coaster car with ride vehicle wheels for running the ride vehicle over a ride track during the normal operation of a ride.

ELEMENT NUMBERS AND DESCRIPTIONS

<table>
<thead>
<tr>
<th>Element Number</th>
<th>Element Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Front short service hood</td>
</tr>
<tr>
<td>103</td>
<td>Lifting door</td>
</tr>
<tr>
<td>105</td>
<td>Service panel</td>
</tr>
<tr>
<td>107</td>
<td>Lifting door handle</td>
</tr>
<tr>
<td>109</td>
<td>Safety foot step</td>
</tr>
<tr>
<td>111</td>
<td>Back short service hood</td>
</tr>
<tr>
<td>113</td>
<td>Single seat</td>
</tr>
<tr>
<td>115</td>
<td>Single seat harness</td>
</tr>
<tr>
<td>117</td>
<td>Right side short video display</td>
</tr>
<tr>
<td>119</td>
<td>Single audio speaker</td>
</tr>
<tr>
<td>121</td>
<td>Front short video display</td>
</tr>
<tr>
<td>123</td>
<td>Single database server system</td>
</tr>
<tr>
<td>125</td>
<td>System internal power source</td>
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<tr>
<td>127</td>
<td>Left side short video display</td>
</tr>
<tr>
<td>129</td>
<td>Short power and data transmission cable system</td>
</tr>
<tr>
<td>131</td>
<td>Single seat passenger</td>
</tr>
<tr>
<td>133</td>
<td>Left side database enabled video display</td>
</tr>
<tr>
<td>135</td>
<td>Right side database enabled video display</td>
</tr>
<tr>
<td>137</td>
<td>Front database enabled video display</td>
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<tr>
<td>139</td>
<td>Single database enabled audio speaker</td>
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<tr>
<td>141</td>
<td>Offline database server system</td>
</tr>
<tr>
<td>143</td>
<td>Ride car wheel</td>
</tr>
<tr>
<td>145</td>
<td>Car electrical contact</td>
</tr>
<tr>
<td>147</td>
<td>Short power transmission cable system</td>
</tr>
<tr>
<td>149</td>
<td>Drive assembly</td>
</tr>
<tr>
<td>151</td>
<td>Seat box</td>
</tr>
<tr>
<td>201</td>
<td>Front long service hood</td>
</tr>
<tr>
<td>203</td>
<td>Sliding door</td>
</tr>
<tr>
<td>205</td>
<td>Sliding door handle</td>
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<td>207</td>
<td>Double seat</td>
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<tr>
<td>209</td>
<td>Double seat harness</td>
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<tr>
<td>211</td>
<td>Database server system and system internal power source unit</td>
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<tr>
<td>213</td>
<td>Right side long video display</td>
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<tr>
<td>215</td>
<td>Left side half-long video display</td>
</tr>
<tr>
<td>217</td>
<td>Front long video display</td>
</tr>
<tr>
<td>219</td>
<td>Hollow wall</td>
</tr>
<tr>
<td>221</td>
<td>Back long service hood</td>
</tr>
<tr>
<td>223</td>
<td>Hack double audio speaker</td>
</tr>
<tr>
<td>225</td>
<td>Power and data transmission cable system</td>
</tr>
<tr>
<td>227</td>
<td>Front double audio speaker</td>
</tr>
<tr>
<td>229</td>
<td>Double seat passenger</td>
</tr>
<tr>
<td>301</td>
<td>Ride vehicle</td>
</tr>
<tr>
<td>303</td>
<td>Ride track</td>
</tr>
<tr>
<td>305</td>
<td>Unloading and loading station</td>
</tr>
<tr>
<td>307</td>
<td>Lift hill</td>
</tr>
<tr>
<td>309</td>
<td>Brake nut</td>
</tr>
<tr>
<td>311</td>
<td>Ride vehicle wheel</td>
</tr>
<tr>
<td>313</td>
<td>Inverted ride vehicle</td>
</tr>
<tr>
<td>315</td>
<td>Ride track support structure</td>
</tr>
<tr>
<td>317</td>
<td>Linear induction motor connecting unit</td>
</tr>
<tr>
<td>319</td>
<td>Inverted ride track</td>
</tr>
<tr>
<td>321</td>
<td>Ride track support beam</td>
</tr>
<tr>
<td>323</td>
<td>Left side database enabled and self-powered video display</td>
</tr>
<tr>
<td>325</td>
<td>Right side database enabled and self-powered video display</td>
</tr>
<tr>
<td>327</td>
<td>Front database enabled and self-powered video display</td>
</tr>
<tr>
<td>329</td>
<td>Single database enabled and self-powered audio speaker</td>
</tr>
</tbody>
</table>

DETAILED DESCRIPTIONS

[0034] FIG. 1 is a perspective left-side view of the first embodiment of an ERST roller coaster car. Multiple of a single seat passenger 131 (only shown in FIG. 3), not shown in FIG. 1, sits within the vehicle and cannot see outside of the vehicle during the normal operation of a ride as multiple of a lifting door 103, with each multiple of lifting door 103 having a lifting door handle 107, is closed down above each passenger compartment of the vehicle. For gaining access to internal systems of the vehicle a front short service hood 101, a back short service hood 111, and multiple of a service panel 105 can be accessed to get to power systems and simulation technology systems. A safety foot step 109 is for safety and support of passenger unloading and loading.

[0035] FIG. 2 is a perspective left-side view of the first embodiment of an ERST roller coaster car with multiple of lifting door 103 open. This is the state of the vehicle in the unloading and loading mode for before and after the normal operation of a ride. Multiple of a single audio speaker 119 above each of a single seat 113 can be seen. Each single seat 113 has a single seat harness 115 for safety during the normal
operation of a ride. Each single seat 113 has next to it a right side short video display 117. Also in view, multiple of service panel 105, multiple of lifting door handle 107, front short service hood 101, back short service hood 111, and safety foot step 109.

[0036] FIG. 3 is an aerial cross-sectional view of the first embodiment of an ERST roller coaster car. A front short video display 121 is directly in front of each single seat 113. Across from each right side short video display 117 and next to each single seat 113 is a left side short video display 127. A single database server system 123 is located as where it would be under front short service hood 101 (shown in FIG. 1 and FIG. 2); however, front short service hood 101 (shown in FIG. 1 and FIG. 2) is not shown in FIG. 3 for viewing of single database server system 123. A system internal power source 125 is located as where it would be under back short service hood 111 (shown in FIG. 1 and FIG. 2); however, back short service hood 111 (shown in FIG. 1 and FIG. 2) is not shown in FIG. 3 for viewing of system internal power source 125. Viewable is multiple of single seat harness 115. Also viewable is multiple of a short power and data transmission cable system 129 that transmits power between internal components of the vehicle and system internal power source 125 and transmits data between internal components of the vehicle and single database server system 123. Also viewable is safety foot step 109 and multiple of single seat passenger 131.

[0037] FIG. 4 is a perspective left-side and cross-sectional view of the second embodiment of an ERST roller coaster car. First row of multiple of a double seat 207 of the vehicle is not shown (first row of double seat 207 is shown in FIG. 6) for improved viewing of internal components. A front long service hood 201 is viewable and multiple of double seat 207 with each double seat 207 having a double seat harness 209 for safety during the normal operation of a ride. Also viewable are a database server system and system internal power source unit 211, a right side long video display 213, and a back long service hood 221. A back double audio speaker 223 is viewable above back row of multiple of double seat 207. Also viewable is a power and data transmission cable system 225.

[0038] FIG. 5 is a perspective left-side view of the second embodiment of an ERST roller coaster car with multiple of a sliding door 203 closed for viewing of the vehicle during the normal operation of a ride. Multiple of a double seat passenger 229 (only shown in FIG. 6), not shown in FIG. 5, would be inside the vehicle and would not be able to see outside of the vehicle during the normal operation of a ride as multiple of sliding door 203 is closed. Viewable is front long service hood 201 and a sliding door handle 205 found on each multiple of sliding door 203. Multiple of said sliding door 203 would be open during the unloading and loading of passengers of the vehicle.

[0039] FIG. 6 is an aerial cross-sectional view of the second embodiment of an ERST roller coaster car. First row of multiple of double seat 207 of the vehicle is shown. Viewable is front long service hood 201, back long service hood 221, multiple of double seat 207, multiple of double seat harness 209, right side long video display 213, and database server system and system internal power source unit 211. A left side half-long video display 215 is viewable on the interior side of each multiple of sliding door 203. A front long video display 217 is located on the interior front of the ride vehicle and facing all rows of multiple of double seat 207. A hollow wall 219 holds right side long video display 213, multiple of left side half-long video display 215, multiple of a front double audio speaker 227, front long video display 217; and power and data transmission cable system 225. Power and data transmission cable system 225 transmits power and data between internal components of the vehicle (such as those listed as being in hollow wall 219) and database server system and system internal power source unit 211. Back double audio speaker 223 can be seen behind of back row of double seat 207. Multiple of double seat passenger 229 is viewable.

[0040] FIG. 7 is an aerial cross-sectional view of the third embodiment of an ERST roller coaster car for viewing of vehicle internal components. A front database enabled video display 137 is directly in front of each of a single seat 113. Across from each of a right side database enabled video display 135 and next to each of multiple of single seat 113 is a left side database enabled video display 133. Viewable are multiple of a single seat harness 115, a safety foot step 109, and multiple of a single seat passenger 131. Also viewable are multiple of a drive assembly 149 and multiple of a short power transmission cable system 147.

[0041] FIG. 8 is an aerial view of an offsite database server system 141 for use by the third embodiment of an ERST roller coaster car. Offsite database server system 141 is located offsite in an area that is external to and away from the ride vehicle making offsite database server system 141 an external database server to the ride vehicle.

[0042] FIG. 9 is a perspective left-side view of the third embodiment of an ERST roller coaster car with multiple of a lifting door 103 open. This is the state of the vehicle in unloading and loading mode for before and after the normal operation of a ride. Multiple of a single database enabled audio speaker 139 above each multiple of single seat 113 can be seen. Each multiple of single seat 113 has a single seat harness 115 for safety during the normal operation of a ride. Each multiple of single seat 113 has next to it right side database enabled video display 135. Also in view, multiple of a service panel 105, multiple of a lifting door handle 107, a front short service hood 101, a back short service hood 111, and safety foot step 109.

[0043] FIG. 10 is a bottom view of the underside of the third embodiment of an ERST roller coaster car with multiple of a ride car wheel 143 and multiple of a car electrical contact 145 for running the ride vehicle over a powered ride track system and collecting power from car-to-track connections during the normal operation of a ride. This makes the powered ride track system an external power source to the roller coaster car.

[0044] FIG. 11 is a side view of an amusement park roller coaster ride using an ERST roller coaster car with a design corresponding to the first embodiment of the current invention as multiple of a ride vehicle 301; however, the second, third, and fourth embodiments could also be utilized for this type of roller coaster ride. A ride track 303 with multiple of a ride track support beam 321 supports motions of multiple of said ride vehicle 301 as it moves up a lift hill 307 to reach the peak of the roller coaster ride. A brake run 309 brings multiple of said ride vehicle 301 to a slow as it approaches and stops in an unloading and loading station 305.

[0045] FIG. 12 is a side view of ride vehicle 301 fitted with multiple of a ride vehicle wheel 311 for riding over ride track 303. Ride vehicle 301 still has capability for being refitted with other interfacing members (including varying other types of car wheels or hooking devices common to modern roller coaster cars) for connecting to other ride track systems.
without compromising the components and technology unique to ERST roller coaster car design.

**[0046]** FIG. 13 is a side view of an amusement park roller coaster ride using an ERST roller coaster car with a design corresponding to the second embodiment of the current invention as multiple of an inverted ride vehicle 313; however, the first, third, and fourth embodiments could also be utilized for this type of roller coaster ride by making modifications for doors that can open downward instead of upward. An inverted ride track 319 with multiple of a ride track support structure 315 supports motions of multiple of inverted ride vehicle 313 as it moves through the ride system by multiple of a linear induction motor connecting unit 317. Multiple of inverted ride vehicle 313 stops in an unloading and loading station 305 between the normal operations of rides of the ride system to unload and load passengers.

**[0047]** FIG. 14 is a side view of inverted ride vehicle 313 fitted with multiple of linear induction motor connecting unit 317 for riding along inverted ride track 319. Inverted ride vehicle 313 still has capability for being refitted with other interfacing members (including varying other types of car wheels or hoisting devices common to modern roller coaster cars) for connecting to other ride track systems without compromising the components and technology unique to ERST roller coaster car design.

**[0048]** FIG. 15 is a partial and cross-sectional view of the interior passenger compartment of an ERST roller coaster car design corresponding to the third embodiment of the current invention and showing a simulated ride theme adventure of a snowmobile ride through a snowy mountain range being viewed by single seat passenger 131 during the normal operation of a ride. Front database enabled video display 137 is directly in front of single seat 113 in which single seat passenger 131 is sitting in. Single seat passenger 131 also has in view right side database enabled video display 135 and left side database enabled video display 133. Multiple of a scent box 151 and multiple of an air vent 153 are underneath front database enabled video display 137. The top of the vehicle has been removed to aid in viewing of configuration of internal components of the ride vehicle.

**[0049]** FIG. 16 is a partial and cross-sectional view of the interior passenger compartment of an ERST roller coaster design corresponding to the third embodiment of the current invention and showing a simulated ride theme adventure of a futuristic space battle through space being viewed by single seat passenger 131 during the normal operation of a ride. Front database enabled video display 137 is directly in front of single seat 113 in which single seat passenger 131 is sitting in. Single seat passenger 131 also has in view right side database enabled video display 135 and left side database enabled video display 133. The top of the vehicle has been removed to aid in viewing of configuration of internal components of the vehicle.

**[0050]** FIG. 17 is an aerial cross-sectional view of the fourth embodiment of an ERST roller coaster car for viewing of vehicle internal components. Multiple of a front database enabled and self-powered video display 327 is directly in front of each of a single seat 113. Across from each of a right side database enabled and self-powered video display 325 and next to each of multiple of single seat 113 is a left side database enabled and self-powered video display 323. Viewable are multiple of a single seat harness 115, a safety foot step 109, and multiple of a single seat passenger 131. Also viewable is multiple of a single database enabled and self-powered audio speaker 329.

**[0051]** FIG. 18 is a bottom view of the underside of the fourth embodiment of an ERST roller coaster car with multiple of a ride car wheel 143 for running the ride vehicle over a ride track system during the normal operation of a ride. Also viewable is safety foot step 109.

**Operation**

**[0052]** Operation of an ERST roller coaster car follows an unloading and loading procedure similar to modern roller coaster cars; however, the true departure from traditional motion rides occurs upon the closing of the doors of an ERST roller coaster car. During the normal operation of a ride of an ERST roller coaster car, passengers within the ride vehicle are visually encapsulated from the surrounding environment to the ride vehicle while the ride vehicle utilizes reusable simulation technology for creating a simulated ride theme adventure to compliment the motions of the vehicle as it moves through a roller coaster ride. These motions experienced by passengers are true velocities and accelerations common and inherent to modern roller coaster rides. This visual encapsulation of passengers ensures that passengers only have the interior (including, but not limited to, ride simulator components and corresponding simulated ride images) of the ERST roller coaster car in their field of view and not the environment outside to and surrounding the ERST roller coaster car. This further ensures that passengers experience consistent ride intensity and realism as created by use of an ERST roller coaster car.

**[0053]** It should be noted that operation of an ERST roller coaster car is designed with no particular dependence on any existing roller coaster structure, system, manufacturer, or rail specification. Rather, it is the unique design of an ERST roller coaster car (dependent on the effective integration of encapsulating and reusable ride simulation technology into a ride vehicle) that is of importance in the present invention. In other words, users of an ERST roller coaster car, for a given ride system, can choose their preferences for specifications for connecting an ERST roller coaster car to a ride track. This applies to a large number of varying type of motion ride systems as the building of ride tracks and connecting roller coaster cars (and other ride vehicle types) to tracks is a commonly known practice with proven methods and standards. For all these reasons, this technology is not heavily discussed as it is widely understood among those in fields of ride design, ride manufacturing, and ride operation and does not relate to the novelty of ERST roller coaster car technology as an ERST roller coaster car does not depend on any single specification of car-to-track connection. Consequently, the embodiments of the current invention are presented to provide flexibility for use of ERST roller coaster cars for potentially any ride track system in use today.

**[0054]** For example, the first embodiment, third embodiment, and fourth embodiment of the current invention could compliment roller coaster cars with single seat rows such as Disneyland’s Space Mountain. The designs of these embodiments could also be expanded to accommodate cars with rows holding more than one seat like the roller coaster car of Universal’s Hollywood Rip Ride Rockit that has two seats per row. For roller coasters that have a much higher multiple of seats per row, like Six Flag’s Riddler’s Revenge, the second embodiment of the current invention could accommodate
these larger structures as it can hold a greater multiple of seats across each row. These embodiments are not limited to these examples. It is only noted that their designs would be the preferred constructions for these types of existing roller coaster ride systems. Other ERST roller coaster car designs are possible as long as requirements for ERST roller coaster car technology are met as defined in the claims. It is also noted that each embodiment uses a powered computer network system with components on the system for storing, retrieving, transmitting, and displaying video data and audio data of simulated rides. Powered computer network systems vary with how they attain their electrical power and transmit video and audio data through the network yet each embodiment meets requirements of ERST roller coaster car technology as presented in the claims. Further operational details of all embodiments are discussed in the following sections.

[0055] The first embodiment of an ERST roller coaster car uses multiple of single seat 113 for seating multiple of single seat passenger 131. It has multiple of lifting door 103 for being open to allow passengers to unload and load and for being closed during the normal operation of a ride so as to create a visually encapsulating car that allows passengers to view only internal components of the car including, but not limited to, multiple of front short video display 121, multiple of right side short video display 117, and multiple of left side short video display 127. Left side short video display 127 is located on the inner side of lifting door 103 for each of lifting door 103. Sound accompaniment to all simulated ride video and ride motions experienced by passengers during the normal operation of a ride is accomplished in the first embodiment by multiple of single audio speaker 119. Single database server system 123 and system internal power source 125 provide the first embodiment with storage, retrieval, and transmission of data and power through dual hardware network connection and power transmission connection of short power and data transmission cable system 129 to multiple of right side short video display 117, multiple of left side short video display 127, multiple of front short video display 121, and multiple of single audio speaker 119.

[0056] The second embodiment of the ERST roller coaster car uses multiple of double seat 207 for seating multiple of double seat passenger 229. It has multiple of sliding door 203 for being open to allow passengers to unload and load and for being closed during the normal operation of a ride so as to visually encapsulate all passengers in a single compartment that allows only viewing of internal components of the car including, but not limited to, front long video display 217, right side long video display 213, and multiple of left side half-long video display 215. Sound accompaniment to all simulated ride video and ride motions experienced by passengers during the normal operation of a ride is accomplished in the second embodiment by back double audio speaker 223 and multiple of front double audio speaker 227. The second embodiment uses database server system and system internal power source unit 211 for storage, retrieval, and transmission of data and power through hardware network connection of power and data transmission cable system 225 to right side long video display 213, multiple of left side half-long video display 215, front long video display 217, back double audio speaker 223, and multiple of front double audio speaker 227.

[0057] The third embodiment of the current invention is the same design to the first embodiment of the current invention with the exceptions of removal of single database server system 123 and system internal power source 125 from the ride vehicle, added components of multiple of drive assembly 149, multiple of ride car wheel 143, and multiple of car electrical contact 145 to the ride vehicle and replacement of multiple of short power and data transmission cable system 129 with multiple of short power transmission cable system 147. This vehicle is adapted to connect to a track system of a ride for attaining electrical power from the ride track by the connection of multiple of car electrical contact 145 and for the self-sufficient ability to run the length of the track system of the ride by drive assembly 149 and multiple of ride car wheel 143. The vehicle is also adapted with internal simulator components having self-sufficient capabilities for data processing of video and audio presentation of ride simulated themes. These are found in predetermined configuration of multiple of front database enabled video display 137, multiple of right side database enabled video display 135, multiple of left side database enabled video display 133, and multiple of single database enabled audio speaker 139.

[0058] These simulator components not only present the video and audio of the simulated ride theme to multiple of single seat passenger 131 of the vehicle but also store and retrieve video data and audio data corresponding to this simulated ride theme. Updates to stored video and audio data can be made by remote network connection between internal simulator components of the vehicle (including multiple of front database enabled video display 137, multiple of right side database enabled video display 135, multiple left side database enabled video display 133, and multiple of single database enabled audio speaker 139) and offsite database server system 141. Offsite database server system 141 can be placed in several potential areas away from the vehicle but a station for unloading and loading of passengers would be preferred for coordinating database maintenance with vehicle maintenance. Also, offsite database server system 141 could be used for any of the embodiments of the current invention for making a remote network connection as all embodiments use some type of internal database system whether as a lone database server system, a database server system coupled to a power system, a database server system coupled to a simulator component, or a database server system coupled to a simulator component and a power system.

[0059] The third embodiment is presented in FIG. 15 and FIG. 16 for viewing of the inside of the passenger compartment of the vehicle with simulated ride theme adventures. FIG. 15 shows a snowmobile ride through a snowy mountain range created by real video images of a snowy mountain range. FIG. 16 shows a futuristic space battle through space created by computer generated imagery of space and space elements. Because there are multiple passenger compartments in the first, third, and fourth embodiments, running different simulated ride theme adventures in the same vehicle is possible. FIG. 15 also shows the capacity of an ERST roller coaster car to execute simulated effects beyond video and audio presentations. In FIG. 15, multiple of air vent 153 allows for air to move into the car while still keeping the vehicle visually encapsulated from the surrounding environment. This rushing air can be pumped with varying scents for enhancing the simulated ride adventure by multiple of scent box 151. Multiple of scent box 151 in the snowmobile simulated ride could be supplied with scents of a forest and these scents pumped through multiple of air vent 153 for single said passenger 131 to smell.

[0060] It should also be noted that while all embodiments of the current invention are varied in their methods of storage,
retrieval, and transmission of power and data, all these mechanisms are kept mostly “behind-the-scenes” so passengers of each embodiment are not concerned about these background processes so as to simply enjoy the presentation of the simulated ride theme adventure and motions of the roller coaster ride. For example, the third and fourth embodiments are both using video displays and audio speakers with built-in internal database systems but with different powering mechanisms for these simulator components. The difference in these powering mechanisms would not be readily distinguishable by passengers of the ride vehicle. In another example, each database enabled and self-powered simulator component of the fourth embodiment can communicate to each other by remote network connection for coordinating simulated ride theme adventures, whereas the first embodiment uses a hardware network connection (though, all database systems with hardware network connections still have the capabilities of remote network connections if needed). The difference in these network connection mechanisms would also not be readily distinguishable by passengers of the ride vehicle. Therefore, the compartment environments in FIG. 15 and FIG. 16 of simulated ride theme adventures are mostly the same as what would be experienced in the other embodiments with the most notable exception being that the second embodiment would have additional passengers in the compartment and with different compartment dimensions relative to the other embodiments. In comparison, the seats of the first, third, and fourth embodiments could be expanded to hold multiple passengers in each compartment and still keep single row seats.

[0061] The fourth embodiment of the current invention is the same as the third embodiment of the current invention with the exceptions of removal of multiple of drive assembly 149, multiple of car electrical contact 145, multiple of air vent 153, and multiple of scent box 151 and replacement of multiple of front database enabled video display 137, multiple of right side database enabled video display 135, multiple of left side database enabled video display 133, and multiple of single database enabled audio speaker 139 with database enabled and power self-sufficient simulation components including multiple of front database enabled and self-powered video display 327, multiple of right side database enabled and self-powered video display 325, multiple of left side database enabled and self-powered video display 323, and multiple of a single database enabled and self-powered audio speaker 329. The design for this embodiment is for simulator components to be in control of their own data, power, and network connections. This results in a very light car design that would be well suited for a roller coaster system that uses primarily lift hills, brake runs, and the force of gravity for moving cars through the ride track. Though each row has single seats (and also in the first and third embodiments), multiple seats could be utilized by integrating car body designs of the second embodiment while still integrating these data processing and power processing self-sufficient simulator components into the ride vehicle.

[0062] The embodiments of the current invention present varying components and related processes for creating an ERST roller coaster car. The features of these embodiments can be further combined in other possible embodiments as long as the requirements of ERST roller coaster car technology, as detailed in the claims, are fulfilled. For example, the first embodiment and third embodiment designs could be combined to hold multiple of drive assembly 149, single database server system 123, and system internal power source 125 all in one ride vehicle. This design could be more advantageous for a specific ride track system (such as a system where car motion and car simulation technology needs to be primarily controlled by each separate car). This would still meet ERST roller coaster car technology requirements as passengers would still be engaged in a ride during which they are visually encapsulated inside the roller coaster car while simultaneously experiencing a simulated ride theme adventure and ride motions of the roller coaster ride. The combination of components most suitable for a ride vehicle would then depend on the preferences of ride designers and ride operators and the specifications of the ride track system for use of an ERST roller coaster car. More details for preferred and specific technology components are discussed in following sections.

[0063] All embodiments of the current invention have multiple video displays for supporting the visual effects of displayed objects (real images, computer generated images, or a combination of both) moving relative to passengers. For example, a displayed object (which can be nearly anything imaginable from a falling boulder to a futuristic space battle laser blast to a scary monster to the Moon) can first appear in a display at the front of the vehicle and then shift from appearing in this display into a different display found further back inside the vehicle and vice versa. This shifting of position of a displayed object creates a relative illusion of motion between displayed objects and passengers of the ride vehicle. The second embodiment also has an audio output configuration to compliment a shift of sound from speakers in the front of the vehicle to speakers in the back of the vehicle to create the effect of a moving source of sound. Further configurations for complimenting the relative visual and auditory effects of motion of simulated objects are possible and are considered a novel use of ERST roller coaster car design for creating a ride with increased intensity and realism. Furthermore, any of the other embodiments of the current invention could also be fitted with varying positions of audio speakers similar to the second embodiment.

[0064] The displaying of video by any of the embodiments can be performed by an array of possible components including, but not limited to, liquid crystal displays, plasma display panels, cathode ray tube screens, light-emitting diode (LED) screens, and optical projector screens. Choice for display types would be most dependent on potential ride themes, unique preferences of users, and use of an ERST roller coaster car for a specific roller coaster ride system. Though, it would be preferred to use high-definition quality LED screens for two-dimensional video output. Furthermore, three-dimensional (3D) video output complimented by the common use of “3D glasses” could also be utilized and would be a very effective imaging scheme for use in an ERST roller coaster car as optical projectors could be easily fitted into an ERST roller coaster car (for example, 3D projectors integrated into database server system and system internal power source unit 211 in the second embodiment would be very effective). Audio output is preferred to be utilized by at least a platform of stereophonic sound systems. Though, techniques of surround sound systems and other advanced audio presentation methods would also be effective for use in an ERST roller coaster car. Choice for database server systems is from a variety of available vendors including, but not limited to, Oracle, Microsoft SQL Server, and IBM DB2 (for database
management systems) and IBM, Hewlett-Packard, Dell, and Sun Microsystems (for hardware servers).

[0065] Because remote connections as well as hardware connections could be utilized for data transmission and because Geographic Information Systems (GIS) mapping of ERST roller coaster cars could provide data for real-time processing of car locations, velocities, accelerations, and more, an Oracle 11g R2 Enterprise Edition database management system running on an IBM hardware server system would be desired. Remote connection to the Oracle system by an offsite administrator could be used for tracking and managing of multiple ERST roller coaster cars running on a ride track system during the unloading and loading of passengers and during the normal operation of a ride. Also, an onboard database server, or database enabled video and audio presentation component, or database enabled and self-powered video and audio presentation component, could function with hardware and remote network connections.

[0066] For example, hardware network connection can transmit data between an onboard database server and internal simulator components of an ERST roller coaster car for running the simulated ride theme adventure while remote network connection can transmit data between the onboard database server and an offsite database server for performing database maintenance on the onboard system. It should be noted that such remote maintenance can added extra flexibility for an offsite administrator to perform security, backup and recovery, performance tuning, data collection and analysis, and other system tasks during or in between normal operations of rides. It should also be noted that while a database server is the chosen type of data storage medium, other types of data storage mediums could include, but are not limited to, digital versatile discs or flash drives inputted directly to, or integrated directly into, video and audio presentation components. The choice of a popular vendor database server is for issues including, but not limited to, performance, software programming flexibility, and video and audio quality of simulated ride theme adventure presentation.

[0067] An internal or external power source could be, but not limited to, an alternating current power supply, direct current power supply, a battery, fuel cells, a generator, an alternator, solar panels, a combustible engine, a linear induction motor unit, a powered ride track, or a combination of such kinds of power sources. For an internal power source, it is preferred to use an automotive battery supply unit for supplying electrical power to internal components of the ride vehicle. Though, an external power source could have more options as it would not be limited by the size of the ride vehicle. For external power sources, a powered ride track feeding electricity to electrical contacts of the ride vehicle would be preferred for traditional design roller coasters. A linear induction motor unit connecting a ride track system and a ride vehicle with power delivery would be preferred for an inverted roller coaster. Though there are several possibilities for internal and external power sources, preference would depend on users, the roller coaster ride system, and specific uses of the ERST roller coaster car.

[0068] The embodiments capture ERST roller coaster car designs that move along a roller coaster ride track while simultaneously presenting an intimate simulated ride theme adventure to passengers visually encapsulated inside the ride vehicle. This placement of ride simulation technology inside ERST roller coaster cars has the capacity to compliment themes ranging from space travel to NASCAR racing to riding a dragon through an 11th century world of North Atlantic islands and Norse-persons. In other words, the possibilities are almost endless. It is important, however, to maintain the synergistic effects of intensity and realism of the ride experience by ensuring passengers are visually encapsulated from the outside environment of the ride vehicle during the normal operation of the ride. Along this line, a further effect of concealing from passengers that the ERST roller coaster car uses a ride track could be accomplished to create a ride experience potentially more intense as passengers would believe they were only in some type of modern ride simulator with limited motion movement capabilities. For this effect, passengers would have to be unloaded and loaded so that the ride track would not be seen either by removing lighting to the track, covering the track, or a combination of effects.

[0069] A key feature of ERST roller coaster car design is reusability and it is accomplished in two forms. The embodiments of the current invention are identified as ERST roller coaster cars for use across a wide spectrum for type of ride track systems from tracks with riders sitting in single seats to tracks that are constructed for larger numbers of multiple riders riding in the same row. These embodiments can be used across different types of roller coasters and ride track systems because use of an ERST roller coaster car is not dependent on factors like car-to-track connections. This is the hardware reusability of the ERST roller coaster car design. The other form of reusability, software reusability, comes from ERST roller coaster car software programming flexibility. Developed and tested simulated ride adventures can be copied and reused from one roller coaster car (such as a car of the second embodiment) to another car (such as a car of the fourth embodiment). This software programming flexibility can be further used to allow simulated ride changes to be varied on the same ride track system either during or in between normal operations of rides. This is another key feature of ERST roller coaster car technology and is referred to as the variability of the system.

[0070] ERST roller coaster car variability on repeated cycles of the same ride track is accomplished by software programming flexibility inherent in the first embodiment by single database server system 123, system internal power source 125, multiple of short power and data transmission cable 129, multiple of right side short video display 117, multiple of left side short video display 127, multiple of front short video display 121, and multiple of single audio speaker 119. Single database server system 123 can store multiple ride simulations for a variety of themed ride adventures which can be accessed in real-time for changing the ride theme during or between the normal operations of rides. Also, updates to stored video data and audio data can be made by hardware connection or remote connection between internal simulator components of the vehicle and single database server system 123 (which can support the copying and reusing of simulated ride theme adventures for the reusability of the system).

[0071] Software programming flexibility is accomplished in the second embodiment by database server system and system internal power source unit 211, multiple of power and data transmission cable system 225, front long video display 217, right side long video display 213, multiple of left side half-long video display 215, back double audio speaker 223, and multiple of front double audio speaker 227. Database server system and system internal power source unit 211 can store multiple simulations for a variety of themed ride adven-
tures which can be accessed in real-time for changing the ride theme during or between the normal operations of rides. Also, updates to stored video data and audio data can be made by hardware connection or remote connection between internal simulator components of the vehicle and database server system and system internal power source unit 211 (which can support the copying and reusing of simulated ride theme adventures for the reusability of the system).

[0072] Software programming flexibility is accomplished in the third embodiment by multiple of front database enabled video display 137, multiple of right side database enabled video display 135, multiple of left side database enabled video display 133, and multiple of single database enabled audio speaker 139 and offsite database server system 141. These internal simulator components of the vehicle can store multiple simulations for a variety of themed ride adventures which can be accessed in real-time for changing the ride theme during or between the normal operations of rides. Also, updates to stored video data and audio data can be made by remote connection between internal simulator components of the vehicle and offsite database server system 141 (which can support the copying and reusing of simulated ride theme adventures for the reusability of the system).

[0073] Software programming flexibility is accomplished in the fourth embodiment by multiple of front database enabled and self-powered video display 327, multiple of right side database enabled and self-powered video display 325, multiple of left side database enabled and self-powered video display 323, and multiple of a single database enabled and self-powered audio speaker 329. These internal simulator components of the vehicle can store multiple simulations for a variety of themed ride adventures which can be accessed in real-time for changing the ride theme during or between the normal operations of rides. Also, updates to stored video data and audio data can be made by remote connection between internal simulator components of the vehicle (which can support the copying and reusing of simulated ride theme adventures for the reusability of the system).

[0074] The choice of keeping onboard database server systems and power source systems in the first embodiment and second embodiment could help to make each ERST roller coaster car more self-sufficient, more flexible for use across several roller coasters and ride track systems, and more high-powered for systems applications. The design of the third embodiment, however, could be very useful for reducing weights and centralizing the database server for all ride vehicles of an entire ride system. This may serve ride operators with a more manageable method for maintaining the entire ride system. The design of the fourth embodiment is to provide very strict self-sufficiency for each car. This would be more advantageous for ride systems that can offer little to no database systems and power systems support. Though all embodiments of the current invention are varied in how they store, retrieve, and transmit data and power through the ride vehicle, they all meet the technological requirements of being an ERST roller coaster as detailed in the claims.

[0075] For example, data storage mediums in the first, second, and fourth embodiments are internal database systems of single database server system 123 in the first embodiment, database server system and system internal power source unit 211 in the second embodiment, and multiple of front database enabled and self-powered video display 327, multiple of right side database enabled and self-powered video display 325, multiple of left side database enabled and self-powered video display 323, and multiple of a single database enabled and self-powered audio speaker 329 in the fourth embodiment. The third embodiment has the option of using either an internal database system of multiple of front database enabled video display 137, multiple of right side database enabled video display 135, multiple of left side database enabled video display 133, and multiple of single database enabled audio speaker 139, or an external database of offsite database server system 141.

[0076] Simulated ride environments created by the embodiments of the current invention are accomplished by internal components of varying ERST roller coaster car designs as presented in the accompanying drawings. It is apparent that varying applications of encapsulating and reusable simulation technologies are possible for accomplishing the same set of effects unique to the current invention. Such applications, however, would be dependent upon the roller coaster system targeted for use and what features could be accommodated; however, the capacity for the ERST roller coaster car to be modified without compromising ERST roller coaster car technology is present with the capacity for numerous design possibilities. The choice to use either first embodiment, second embodiment, third embodiment, fourth embodiment or a combination of features drawing from some or all of the embodiments of the current invention (as long as this combination still meets requirements of ERST roller coaster car technology as detailed in the content of the claims) depends on the targeted roller coaster system and the unique set of preferences and requirements of the user the specific use of the ERST roller coaster car.

[0077] ERST roller coaster car technology not only creates synergistic effects of increased intensity and realism of the ride experience but also provides new tools and models for overall ride operation. Because database server systems are programmable, rides can be updated in real time for changing themes between the normal operations of rides or during the normal operation of a ride. Such a practice could be used to surprise passengers of an ERST roller coaster car with a pseudo-randomly selected ride theme from a massive and expansive group of possible simulated ride adventures and during any period of use of an ERST roller coaster car. A single ERST roller coaster car, for any of the embodiments of the current invention, could present passengers with a simulated bobsled ride through a mountain range with trees full of snow, unload these passengers, load new passengers, and take the new group through a simulated virtual computer world with futuristic bikes and game grids. First, third, and fourth embodiments of the current invention could even allow for different simulated ride themes occurring in the different passenger compartments during the same roller coaster ride. Passengers could decide while waiting for their ride vehicle which ride vehicle they would like simulated, whether they would all want the same simulated ride theme or different themes, or whether they would prefer the database system to pseudo-randomly choose a ride theme adventure for them.

CONCLUSION

[0078] ERST roller coaster car technology is a unique and encompassing solution to the current problems of modern amusement park rides that are routinely classified as being in either one of two categories: thrill rides or ride simulators. An ERST roller coaster car captures the best technologies of both types of amusement park rides by providing for encapsulating and reusable simulation technology in ride vehicles for cre-
ating simulated themed ride experiences while in parallel complimenting these simulated ride adventures with the true motion velocities and accelerations of a roller coaster ride. [0079] ERST roller coaster car technology is similar to the historical integration of computer animation into film productions. Early critics of such computer applications felt that “hand-drawn” animations were too superior relative to computer generated images to ever be replaced. In time, it was shown that computer generated imaging capabilities were rich and gave a depth of realism and intensity not previously captured by hand-made animations. In comparison, hand-made sceneries of roller coaster rides are severely limited but computer simulated ride theme adventures have an expansive palette of technological and artistic capabilities that can provide riders of ERST roller coaster cars with exciting new ride adventures never before experienced. [0080] There are other design possibilities beyond the embodiments of the current invention for roller coaster cars with integrated ride simulator components that can meet the technology requirements of an ERST roller coaster car. For example, an ERST roller coaster car could be of other shapes (such as a sphere, tube, or ring), other types of roller coaster designs (such as a flying or dive roller coaster), and of other fractions of video displays to non-video displays in the internal passenger compartments of the vehicles (such as video displays that fill the complete field of vision of passengers beyond their bodies, seats, and harnesses). Motion rides of varying other types could also be utilized including, but not limited to, dark rides, drop towers, and monorails. Ride systems use ride vehicles with motion by ride tracks and would therefore benefit as equally from ERST roller coaster car technology as the embodiments of the current invention. Consequently, the applications of ERST roller coaster car technology are wide across a spectrum of roller coaster car designs, motion ride types, and simulation technology implementations. Accordingly, the scope of ERST roller coaster car technology should be judged only by the content of the claims and their legal equivalents.

What is claimed is:
1. A roller coaster ride, comprising:
a ride track; and
at least one roller coaster car, said least one roller coaster car comprising:
an opaque roller coaster car body adapted to connect to
at least one interfacing member for engaging said
opaque roller coaster car body to said ride track;
at least one passenger seating area coupled to said
opaque roller coaster car body for seating at least one
passenger;
at least one opaque movable door integrated into said
opaque roller coaster car body for being open during unloading and loading of said least one passenger of
said roller coaster car and closed during normal operation of said roller coaster ride, whereby said least one passenger is visually encapsulated from the surrounding environment to said roller coaster car as said roller coaster car moves along said ride track and imparts ride motions of said roller coaster ride to said least one passenger;
a ride simulation presentation system connected to said opaque roller coaster car body, said ride simulation presentation system having a predetermined configuration of simulator components that interface by at least one computer network connection to at least one
data storage medium, whereby said ride simulation presentation system presents a simulated ride theme adventure to said least one passenger inside said roller coaster car as said roller coaster car moves along said ride track during the normal operation of said roller coaster ride; and
c a power system connected to said opaque roller coaster car body, said car power system having a predetermined configuration of power system components of at least one power transmission connection, said least one power transmission connection interfacing to at least one power source for supplying power to said least one roller coaster car.
2. The roller coaster ride of claim 1, wherein said least one interfacing member is at least one ride car wheel.
3. The roller coaster ride of claim 1, wherein said least one interfacing member is at least one linear induction motor connecting unit.
4. The roller coaster ride of claim 1, wherein said least one car body comprises a plurality of video displays and a plurality of audio speakers.
5. The roller coaster ride of claim 1, wherein said least one car body comprises a plurality of video displays and a plurality of audio speakers.
6. The roller coaster ride of claim 1, wherein said least one computer network connection is at least one hardware network connection.
7. The roller coaster ride of claim 1, wherein said data storage medium is at least one internal database system of said roller coaster car.
8. The roller coaster ride of claim 1, wherein said data storage medium is at least one external database system to said roller coaster car.
9. The roller coaster ride of claim 1, wherein said least one power transmission connection interfacing to said least one power source is at least one power transmission cable interfacing to at least one internal power source of said roller coaster car.
10. The roller coaster ride of claim 1, wherein said least one power transmission connection interfacing to said least one power source is at least one power transmission cable interfacing to at least one external power source to said roller coaster car.
11. The roller coaster ride of claim 1, wherein said predetermined configuration of simulator components further comprises a plurality of video displays and a plurality of audio speakers.
12. The roller coaster ride of claim 1, wherein said predetermined configuration of simulator components further comprises a plurality of video displays and a plurality of audio speakers.
13. The roller coaster ride of claim 1, wherein said predetermined configuration of simulator components further comprises a plurality of database enabled video displays and a plurality of database enabled audio speakers.
14. A roller coaster car adapted as a hybrid motion ride and ride simulator vehicle, comprising:
an opaque vehicle body adapted to connect to at least one interfacing member for engaging said opaque vehicle body to a ride track for moving said roller coaster car through a roller coaster ride;
at least one passenger seating area coupled to said opaque vehicle body for seating at least one passenger;
at least one opaque movable door integrated into said vehicle body for being open during unloading and load-
ing of said least one passenger of said roller coaster car and closed during the normal operation of said roller coaster ride, whereby said least one passenger is visually encapsulated from the surrounding environment to said roller coaster car as said roller coaster car moves along said ride track and imparts ride motions of said roller coaster ride to said least one passenger;

a ride simulation presentation system connected to said opaque vehicle body, said ride simulation presentation system having a predetermined configuration of simulator components that interface by at least one computer network connection to at least one data storage medium, whereby said ride simulation presentation system presents a simulated ride theme adventure to said least one passenger inside said roller coaster car as said roller coaster car moves along said ride track during the normal operation of said roller coaster ride; and

a vehicle power system connected to said opaque vehicle body, said vehicle power system having a predetermined configuration of power system components of at least one power transmission connection, said least one power transmission connection interfacing to at least one power source for supplying power to said roller coaster car.

15. The roller coaster car of claim 14, wherein said least one interfacing member is at least one ride car wheel.

16. The roller coaster car of claim 14, wherein said least one interfacing member is at least one linear induction motor connecting unit.

17. The roller coaster car of claim 14, wherein said least one interfacing member is at least one drive assembly.

18. The roller coaster car of claim 14, wherein said least one computer network connection is at least one network connection.

19. The roller coaster car of claim 14, wherein said least one computer network connection is at least one hardwire network connection.

20. The roller coaster car of claim 14, wherein said least one data storage medium is at least one internal database system of said roller coaster car.

21. The roller coaster car of claim 14, wherein said least one data storage medium is at least one external database system to said roller coaster car.

22. The roller coaster car of claim 14, wherein said least one power transmission connection interfacing to said least one power source is at least one power transmission cable interfacing to at least one power source of said roller coaster car.

23. The roller coaster car of claim 14, wherein said least one power transmission connection interfacing to said least one power source is at least one electrical contact interfacing to at least one power source of said roller coaster car.

24. The roller coaster car of claim 14, wherein said predetermined configuration of simulator components further comprises a plurality of video displays and a plurality of audio speakers.

25. The roller coaster car of claim 14, wherein said predetermined configuration of simulator components further comprises a plurality of database enabled video displays and a plurality of database enabled audio speakers.

26. The roller coaster car of claim 14, wherein said predetermined configuration of simulator components further comprises a plurality of database enabled video displays and a plurality of database enabled audio speakers.

27. A roller coaster car, comprising:
an opaque vehicle chassis adapted to connect to at least one interfacing member for engaging said opaque vehicle chassis to a roller coaster ride track for moving said roller coaster car through a roller coaster ride;
at least one passenger seating area coupled to said opaque vehicle chassis for seating at least one passenger;
at least one opaque movable door integrated into said vehicle chassis for being open during unloading and loading of said least one passenger of said roller coaster car and closed during the normal operation of said roller coaster ride, whereby said least one passenger is visually encapsulated from the surrounding environment to said roller coaster car as said roller coaster car moves along said roller coaster ride track and imparts ride motions of said roller coaster ride to said least one passenger during the normal operation of said roller coaster ride; and

a self-powered ride simulation presentation system connected to said opaque vehicle chassis, said self-powered ride simulation presentation system having a predetermined configuration of simulator components that interface by at least one computer network connection to at least one data storage medium, whereby said self-powered ride simulation presentation system presents a simulated ride theme adventure to said least one passenger inside said roller coaster car during the normal operation of said roller coaster ride.

28. The roller coaster car of claim 27, wherein said least one interfacing member is at least one ride car wheel.

29. The roller coaster car of claim 27, wherein said least one interfacing member is at least one linear induction motor connecting unit.

30. The roller coaster car of claim 27, wherein said least one interfacing member is at least one drive assembly.

31. The roller coaster car of claim 27, wherein said least one computer network connection is at least one network connection.

32. The roller coaster car of claim 27, wherein said least one computer network connection is at least one hardwire network connection.

33. The roller coaster car of claim 27, wherein said least one data storage medium is at least one internal database system of said roller coaster car.

34. The roller coaster car of claim 27, wherein said least one data storage medium is at least one external database system to said roller coaster car.

35. The roller coaster car of claim 27, wherein said predetermined configuration of simulator components further comprises a plurality of database enabled video displays, a plurality of database enabled and self-powered audio speakers, and a plurality of scented air vents.

36. The roller coaster car of claim 27, wherein said predetermined configuration of simulator components further comprises a plurality of database enabled and self-powered video displays and a plurality of database enabled and self-powered audio speakers.