{CLAIMS}

{Claim 1}

A traffic flow simulation apparatus comprising:

an automobile travel simulation means for simulating travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads; and

a public transportation travel simulation means for simulating travel of a public transportation model simulating public transportation in a route network model simulating a route network including a block means for temporarily blocking travel of the automobile according to a route of at least one of guideway transportation and roadway public transportation and according to travel of the public transportation travelling on the route.

{Claim 2}

The traffic flow simulation apparatus according to claim 1, wherein

the block means is a block apparatus that is arranged at a place where the roads and the route of the guideway transportation intersect and that temporarily blocks the travel of the automobile at the intersecting place when the guideway transportation is traveling through the intersecting place.

{Claim 3}

The traffic flow simulation apparatus according to claim 1, wherein

the roadway public transportation is a bus,

the route of the roadway public transportation overlaps with the roads, and

the block means is a stop where the bus stops.

{Claim 4}

The traffic flow simulation apparatus according to claim 1, wherein

the roadway public transportation is a tram,

the route of the roadway public transportation is along the roads, and

the block means is a traffic light that is arranged at a place where the roads and the route of the tram intersect and that temporarily blocks the travel of the automobile at the intersecting place when the tram is traveling through the intersecting place.

{Claim 5}

The traffic flow simulation apparatus according to any one of claims 1 to 4, further comprising

a person traveling pattern creation means for creating a traveling pattern of a person including a case in which the person uses at least one of the automobile and the public transportation to arrive at a set destination from a set

departure place, wherein

the automobile travel simulation means simulates riding of a person model on the automobile model and leaving of the person model from the automobile model based on the traveling pattern created by the person traveling pattern creation means, and

the public transportation travel simulation means simulates boarding of the person model on the public transportation model and leaving of the person model from the public transportation model based on the traveling pattern created by the person traveling pattern creation means.

{Claim 6}

The traffic flow simulation apparatus according to any one of claims 1 to 5, further comprising

a travel time calculation means for calculating travel time for the person model to travel from the set departure place to the set destination based on the traveling pattern.

{Claim 7}

The traffic flow simulation apparatus according to claim 6, further comprising

a storage control means for controlling a storage means to store the traveling pattern and a simulation result of the person model using the traveling pattern when the travel time calculated by the travel time calculation means is equal to or smaller than a preset tolerance.

{Claim 8}

The traffic flow simulation apparatus according to any one of claims 5 to 7, wherein

a maximum number of persons that can be boarded is set in the public transportation model, and

the traffic flow simulation apparatus further comprises a use state calculation means for calculating a use state of the person in the public transportation model.

{Claim 9}

The traffic flow simulation apparatus according to any one of claims 1 to 8, wherein

energy consumption by travelling is set in the public transportation model, and

the traffic flow simulation apparatus further comprises an energy consumption calculation means for calculating total energy consumption consumed by the travel of the public transportation model.

{Claim 10}

A traffic flow simulation program for causing a computer to function as:

an automobile travel simulation means for simulating travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads;

a public transportation travel simulation means for simulating travel of a public transportation model simulating public transportation in a route network model simulating a route network including a route of at least one of guideway transportation and roadway public transportation that are the public transportation; and

a block simulation means for simulating operation of a block means model simulating a block means for temporarily blocking the travel of the automobile according to the travel of the public transportation travelling on the route.

{Claim 11}

A traffic flow simulation method comprising:

a first step of simulating travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads, and of simulating travel of a public transportation model simulating public transportation in a route network model simulating a route network including a route of at least one of guideway transportation and roadway public transportation that are the public transportation; and

a second step of simulating operation of a block means model simulating a block means for temporarily blocking the travel of the automobile according to the travel of the public transportation travelling on the route.

{Claim 1)

A traffic flow simulation apparatus comprising:

an automobile travel simulation means for simulating travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads;

a public transportation travel simulation means for simulating travel of a public transportation model simulating public transportation in a route network model simulating a route network including a block means for temporarily blocking travel of the automobile according to a route of at least one of guideway transportation and roadway public transportation and according to travel of the public transportation travelling on the route; and

a person traveling pattern creation means for creating a traveling pattern of a person including a case in which the person uses at least one of the automobile and the public transportation to arrive at a set destination from a set departure place, wherein

the automobile travel simulation means simulates riding of a person model on the automobile model and leaving of the person model from the automobile model based on the traveling pattern created by the person traveling pattern creation means,

the public transportation travel simulation means simulates boarding of the person model on the public transportation model and leaving of the person model from the public transportation model based on the traveling pattern created by the person traveling pattern creation means, and

which one of the automobile and the public transportation is to be used is initially set for each person model.

{Claim 2}

The traffic flow simulation apparatus according to claim 1, wherein

the block means is a block apparatus that is arranged at a place where the roads and the route of the guideway transportation intersect and that temporarily blocks the travel of the automobile at the intersecting place when the guideway transportation is traveling through the intersecting place.

{Claim 3}

The traffic flow simulation apparatus according to claim 1, wherein

the roadway public transportation is a bus,

the route of the roadway public transportation overlaps with the roads, and

the block means is a stop where the bus stops.

(Claim 4)

The traffic flow simulation apparatus according to claim 1, wherein

the roadway public transportation is a tram,

the route of the roadway public transportation is along the roads, and

the block means is a traffic light that is arranged at a place where the roads and the route of the tram intersect and that temporarily blocks the travel of the automobile at the intersecting place when the tram is traveling through the intersecting place.

{Claim 5}

The traffic flow simulation apparatus according to any one of claims 1 to 4, further comprising

a travel time calculation means for calculating travel time for the person model to travel from the set departure place to the set destination based on the traveling pattern.

{Claim 6}

The traffic flow simulation apparatus according to claim 5, further comprising

a storage control means for controlling a storage means to store the traveling pattern and a simulation result of the person model using the traveling pattern when the travel time calculated by the travel time calculation means is equal to or

smaller than a preset tolerance.

{Claim 7}

The traffic flow simulation apparatus according to any one of claims 1 to 4, 5, and 6, wherein a maximum number of persons that can be boarded is set in the public transportation model, and

the traffic flow simulation apparatus further comprises a use state calculation means for calculating a use state of the person model in the public transportation model.

{Claim 8}

The traffic flow simulation apparatus according to any one of claims 1 to 7, wherein

energy consumption by travelling is set in the public transportation model, and

the traffic flow simulation apparatus further comprises an energy consumption calculation means for calculating total energy consumption consumed by the travel of the public transportation model.

{Claim 9)

A traffic flow simulation program for causing a computer to function as:

an automobile travel simulation means for simulating

travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads;

a public transportation travel simulation means for simulating travel of a public transportation model simulating public transportation in a route network model simulating a route network including a route of at least one of guideway transportation and roadway public transportation that are the public transportation;

a block simulation means for simulating operation of a block means model simulating a block means for temporarily blocking the travel of the automobile according to the travel of the public transportation travelling on the route; and

a person traveling pattern creation means for creating a traveling pattern of a person including a case in which the person uses at least one of the automobile and the public transportation to arrive at a set destination from a set departure place, wherein

the automobile travel simulation means simulates riding of a person model on the automobile model and leaving of the person model from the automobile model based on the traveling pattern created by the person traveling pattern creation means,

the public transportation travel simulation means

simulates boarding of the person model on the public transportation model and leaving of the person model from the public transportation model based on the traveling pattern created by the person traveling pattern creation means, and

which one of the automobile and the public transportation is to be used is initially set for each person model.

(Claim 10)

A traffic flow simulation method comprising:

a first step of simulating, by an automobile travel simulation means, travel of an automobile model simulating an automobile in a road network model simulating a road network including a plurality of roads and intersections connecting the plurality of roads, and of simulating, by a public transportation travel simulation means, travel of a public transportation model simulating public transportation in a route network model simulating a route network including a route of at least one of guideway transportation and roadway public transportation that are the public transportation; and

a second step of creating, by a person traveling pattern creation means, a traveling pattern of a person including a case in which the person uses at least one of the automobile and the public transportation to arrive at a set destination from a set departure place, wherein

the first step simulates riding of a person model on the

automobile model and leaving of the person model from the automobile model based on the traveling pattern created by the second step,

the first step simulates boarding of the person model on the public transportation model and leaving of the person model from the public transportation model based on the traveling pattern created by the second step, and

which one of the automobile and the public transportation is to be used is initially set for each person model.