SurfaceModel

5.0

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  Factory that creates an interaction facet, for a specific enviornment interaction model, from a facet model.
- file interaction_surface.cc

  Vehicle surface model for general environment interaction models.
- file interaction_surface_factory.cc

  Factory that creates an interaction surface, for a specific enviornment interaction model, from a surface model.
- file surface_model.cc

  Vehicle surface model for general environment interaction models.
- file surface_model_messages.cc

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6.3.1 Detailed Description

6.3.2 Macro Definition Documentation

6.3.2.1 #define PATH "utils/surface_model/"

Definition at line 39 of file surface_model_messages.cc.

Chapter 7

Namespace Documentation

7.1 jeod Namespace Reference

Namespace jeod.

Data Structures

- class Cylinder

  An cylinder implementation of Facet.
- class Facet

  A general base class for all surface model facets.
- class FacetParams

  General base class for all parameters associated with facets in the surface model.
- class FlatPlate

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- class FlatPlateCircular

  An circular flat plate implementation of Facet.
- class FlatPlateThermal

  A FlatPlate implementation of Facet, with thermal information.
- class InteractionFacet

  A base class for an interaction specific facet.
- class InteractionFacetFactory

  A factory to create a specific interaction facet from a general facet.
- class InteractionSurface

  A base class for interaction specific surfaces.
- class InteractionSurfaceFactory

  A base class for creating specific interaction surfaces from general surfaces.
- struct FacetStateInfo

  This is a structure used only in the surface model to aid in relative state calculations for articulation.
- class SurfaceModel

  A general, non-interaction specific surface that can be used to create surfaces suitable for specific interactions.
- class SurfaceModelMessages

  Messages associated with the use of the surface model.

7.1.1 Detailed Description

Namespace jeod.

Chapter 8

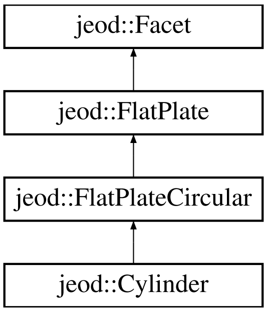
Data Structure Documentation

8.1 jeod::Cylinder Class Reference

An cylinder implementation of Facet.

`#include <cylinder.hh>`

Inheritance diagram for jeod::Cylinder:



Public Member Functions

- Cylinder ()

  Default Constructor.
- virtual ∼Cylinder ()

  Destructor.

Data Fields

- double length

  Length of the cylinder.

Private Member Functions

- Cylinder & operator= (const Cylinder &rhs)
- Cylinder (const Cylinder &rhs)

Friends

- class InputProcessor
- void init_attrjeod__Cylinder ()

Additional Inherited Members

8.1.1 Detailed Description

An cylinder implementation of Facet.

Definition at line 42 of file cylinder.hh.

8.1.2 Constructor & Destructor Documentation

8.1.2.1 jeod::Cylinder::Cylinder (void)

Default Constructor.

Definition at line 42 of file cylinder.cc.

8.1.2.2 jeod::Cylinder::∼Cylinder (void) [virtual]

Destructor.

Definition at line 54 of file cylinder.cc.

8.1.2.3 jeod::Cylinder::Cylinder (const Cylinder & *rhs*) [private]

8.1.3 Member Function Documentation

8.1.3.1 Cylinder& jeod::Cylinder::operator= (const Cylinder & *rhs*) [private]

8.1.4 Friends And Related Function Documentation

8.1.4.1 void init_attrjeod__Cylinder ( ) [friend]

8.1.4.2 friend class InputProcessor [friend]

Definition at line 44 of file cylinder.hh.

8.1.5 Field Documentation

8.1.5.1 double jeod::Cylinder::length

Length of the cylinder.

trick_units(m)

Definition at line 57 of file cylinder.hh.

The documentation for this class was generated from the following files:

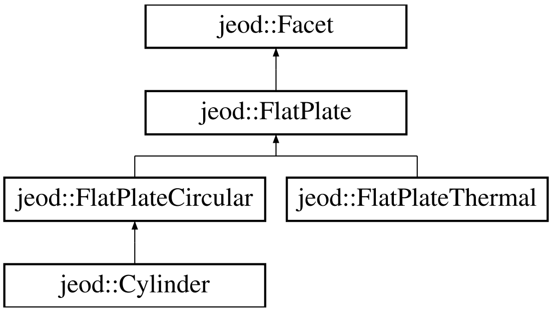
- cylinder.hh
- cylinder.cc

8.2 jeod::Facet Class Reference

A general base class for all surface model facets.

`#include <facet.hh>`

Inheritance diagram for jeod::Facet:



Public Member Functions

- Facet ()

    Default Constructor.
- virtual ∼Facet ()

    Destructor.
- virtual void initialize_mass_connection (BaseDynManager &manager)
- virtual void update_articulation ()
- MassBody ∗ get_mass_body_ptr ()
- MassPointState ∗ get_mass_rel_struct ()

    Getter for the mass_rel_struct element,.
- void set_name (std::string name_in)

    Setter for the name.

Data Fields

- double position [3]

    Position of the facet in the vehicle structural frame.
- double local_position [3]

    Position of the facet in the structure frame of the MassBody this facet is associated with.
- char ∗ param_name

    Name of the facet parameters, usually a material type.
- std::string name

    Name of the facet.
- char ∗ mass_body_name

    The name of the MassBody this facet is associated with.
- double temperature

    Kinetic Temperature of the surface.
- double area

    Area of the plate.

Protected Member Functions

- virtual void update_articulation_internal ()

Protected Attributes

- MassBody ∗ mass_body_ptr

  A pointer to the MassBody this facet is associated with.
- MassPointState ∗ mass_rel_struct

  The relative state between the mass body this facet is associated with, and the user set structure point in the mass tree.
- double int_pos [3]

  An intermediate position, used as a working variable when doing calculations.
- bool connections_initialized

  Indicates if the mass connections for this Facet have been initialized.

Private Member Functions

- Facet & operator= (const Facet &rhs)
- Facet (const Facet &rhs)

Friends

- class InputProcessor
- class SurfaceModel
- void init_attrjeod__Facet ()

8.2.1 Detailed Description

A general base class for all surface model facets.

Definition at line 54 of file facet.hh.

8.2.2 Constructor & Destructor Documentation

8.2.2.1 jeod::Facet::Facet (void)

Default Constructor.

Definition at line 55 of file facet.cc.

References area, int_pos, local_position, position, and temperature.

8.2.2.2 jeod::Facet::∼Facet (void) [virtual]

Destructor.

Definition at line 76 of file facet.cc.

8.2.2.3 jeod::Facet::Facet (const Facet & *rhs*) [private]

8.2.3 Member Function Documentation

8.2.3.1 MassBody ∗ jeod::Facet::get_mass_body_ptr (void)

Definition at line 168 of file facet.cc.

References mass_body_ptr.

8.2.3.2 MassPointState∗ jeod::Facet::get_mass_rel_struct ( ) [inline]

Getter for the mass_rel_struct element,.

Definition at line 78 of file facet.hh.

References mass_rel_struct.

8.2.3.3 void jeod::Facet::initialize_mass_connection (BaseDynManager & *manager*) [virtual]

Definition at line 92 of file facet.cc.

References connections_initialized, jeod::SurfaceModelMessages::initialization_error, mass_body_name, and mass_body_ptr.

8.2.3.4 Facet& jeod::Facet::operator= (const Facet & *rhs*) [private]

8.2.3.5 void jeod::Facet::set_name (std::string *name_in*) [inline]

Setter for the name.

Definition at line 83 of file facet.hh.

References name.

8.2.3.6 void jeod::Facet::update_articulation (void) [virtual]

Definition at line 129 of file facet.cc.

References connections_initialized, jeod::SurfaceModelMessages::initialization_error, and update_articulation_-internal().

8.2.3.7 void jeod::Facet::update_articulation_internal (void) [protected], [virtual]

Reimplemented in jeod::FlatPlate.

Definition at line 183 of file facet.cc.

References int_pos, local_position, mass_rel_struct, and position.

Referenced by update_articulation(), and jeod::FlatPlate::update_articulation_internal().

8.2.4 Friends And Related Function Documentation

8.2.4.1 void init_attrjeod__Facet ( ) [friend]

8.2.4.2 friend class InputProcessor [friend]

Definition at line 56 of file facet.hh.

8.2.4.3 friend class SurfaceModel [friend]

Definition at line 58 of file facet.hh.

8.2.5 Field Documentation

8.2.5.1 double jeod::Facet::area

Area of the plate.

trick_units(m2)

Definition at line 132 of file facet.hh.

Referenced by Facet().

8.2.5.2 bool jeod::Facet::connections_initialized [protected]

Indicates if the mass connections for this Facet have been initialized.

trick_units(–)

Definition at line 163 of file facet.hh.

Referenced by initialize_mass_connection(), and update_articulation().

8.2.5.3 double jeod::Facet::int_pos[3] [protected]

An intermediate position, used as a working variable when doing calculations.

trick_units(m)

Definition at line 157 of file facet.hh.

Referenced by Facet(), and update_articulation_internal().

8.2.5.4 double jeod::Facet::local_position[3]

Position of the facet in the structure frame of the MassBody this facet is associated with.

Used in articulation, contact, etc.trick_units(m)

Definition at line 101 of file facet.hh.

Referenced by Facet(), and update_articulation_internal().

8.2.5.5 char∗ jeod::Facet::mass_body_name

The name of the MassBody this facet is associated with.

This is used, only for specific applications, such as contact and articulation. Otherwise it is optional. This is used to find and cache a pointer to the mass_body, stored below in 'mass_body_ptr'.trick_units(–)

Definition at line 122 of file facet.hh.

Referenced by initialize_mass_connection().

8.2.5.6 MassBody∗ jeod::Facet::mass_body_ptr [protected]

A pointer to the MassBody this facet is associated with.

This is used, only for specific applications, such as contact and articulation. Otherwise it is optional. This pointer is cached from the tree of MassBodies for the mass_body_name set abovetrick_units(–)

Definition at line 144 of file facet.hh.

Referenced by get_mass_body_ptr(), and initialize_mass_connection().

8.2.5.7 MassPointState∗ jeod::Facet::mass_rel_struct [protected]

The relative state between the mass body this facet is associated with, and the user set structure point in the mass tree.

Only used in certain applications, such as articulation.trick_units(–)

Definition at line 151 of file facet.hh.

Referenced by get_mass_rel_struct(), jeod::FlatPlate::update_articulation_internal(), and update_articulation_internal().

8.2.5.8 std::string jeod::Facet::name

Name of the facet.

trick_units(–)

Definition at line 113 of file facet.hh.

Referenced by set_name().

8.2.5.9 char∗ jeod::Facet::param_name

Name of the facet parameters, usually a material type.

Used to match the facet to FacetParamstrick_units(–)

Definition at line 108 of file facet.hh.

8.2.5.10 double jeod::Facet::position[3]

Position of the facet in the vehicle structural frame.

The reference point of the facet is positioned on a class by class basis (example: for flat plate it is the position of the center of pressure)trick_units(m)

Definition at line 95 of file facet.hh.

Referenced by Facet(), and update_articulation_internal().

8.2.5.11 double jeod::Facet::temperature

Kinetic Temperature of the surface.

trick_units(K)

Definition at line 127 of file facet.hh.

Referenced by Facet().

The documentation for this class was generated from the following files:

- facet.hh
- facet.cc

8.3 jeod::FacetParams Class Reference

General base class for all parameters associated with facets in the surface model.

```
#include <facet_params.hh>
```

Public Member Functions

- FacetParams ()

  Default Constructor.
- virtual ∼FacetParams ()

  Destructor.
- void set_name (std::string name_in)

  Setter for the name.

Data Fields

- std::string name

  Name that will be used to match FacetParams to facets.

Private Member Functions

- FacetParams & operator= (const FacetParams &rhs)
- FacetParams (const FacetParams &rhs)

Friends

- class InputProcessor
- void init_attrjeod__FacetParams ()

8.3.1 Detailed Description

General base class for all parameters associated with facets in the surface model.

Definition at line 49 of file facet_params.hh.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 jeod::FacetParams::FacetParams (void)

Default Constructor.

Definition at line 47 of file facet_params.cc.

8.3.2.2 jeod::FacetParams::∼FacetParams (void) [virtual]

Destructor.

Definition at line 61 of file facet_params.cc.

8.3.2.3 jeod::FacetParams::FacetParams (const FacetParams & *rhs*) [private]

8.3.3 Member Function Documentation

8.3.3.1 FacetParams& jeod::FacetParams::operator= (const FacetParams & *rhs*) [private]

8.3.3.2 void jeod::FacetParams::set_name (std::string *name_in*) [inline]

Setter for the name.

Definition at line 71 of file facet_params.hh.

8.3.4 Friends And Related Function Documentation

8.3.4.1 void init_attrjeod__FacetParams ( ) [friend]

8.3.4.2 friend class InputProcessor [friend]

Definition at line 51 of file facet_params.hh.

8.3.5 Field Documentation

8.3.5.1 std::string jeod::FacetParams::name

Name that will be used to match FacetParams to facets.

trick_units(–)

Definition at line 65 of file facet_params.hh.

Referenced by jeod::InteractionSurfaceFactory::add_facet_params().

The documentation for this class was generated from the following files:

- facet_params.hh
- facet_params.cc

8.4 jeod::FacetStateInfo Struct Reference

This is a structure used only in the surface model to aid in relative state calculations for articulation.

```
#include <surface_model.hh>
```

Public Member Functions

- FacetStateInfo ()

  Default constructor to keep the memory manager happy.
- FacetStateInfo (MassBody ∗new_mass_body)

  FacetStateInfo non-default constructor.
- FacetStateInfo (MassBody &new_mass_body)

  FacetStateInfo non-default constructor.
- bool operator== (const FacetStateInfo &rhs) const

  Compare this FacetStateInfo object to another.

Data Fields

- MassPointState mass_state

  The resulting relative mass point state between the structural body named in struct_body_name and the MassBody pointed to in this structure's mass_body.
- MassBody ∗ mass_body

  The MassBody object whose state, relative and w.r.t.

Friends

- class InputProcessor
- void init_attrjeod__FacetStateInfo ()

8.4.1 Detailed Description

This is a structure used only in the surface model to aid in relative state calculations for articulation.

For each mass body that needs a relative state calculated w.r.t. the mass body named in struct_body_name, one of these objects will be instantiated. That way, the relative state information must only be calculated once per mass body.

Definition at line 60 of file surface_model.hh.

8.4.2 Constructor & Destructor Documentation

8.4.2.1 jeod::FacetStateInfo::FacetStateInfo ( ) [inline]

Default constructor to keep the memory manager happy.

Definition at line 79 of file surface_model.hh.

8.4.2.2 jeod::FacetStateInfo::FacetStateInfo (MassBody ∗ *new_mass_body*) [inline]

FacetStateInfo non-default constructor.

Parameters

new_mass_body	The mass body to which this object will refer.

Definition at line 85 of file surface_model.hh.

8.4.2.3 jeod::FacetStateInfo::FacetStateInfo (MassBody & *new_mass_body*) [inline]

FacetStateInfo non-default constructor.

Parameters

new_mass_body	The mass body to which this object will refer.

Definition at line 94 of file surface_model.hh.

8.4.3 Member Function Documentation

8.4.3.1 bool jeod::FacetStateInfo::operator== (const FacetStateInfo & *rhs*) const [inline]

Compare this FacetStateInfo object to another.

The two are 'equal' if they refer to the same mass body.

Parameters

rhs	Object to be compared with this object.

Definition at line 104 of file surface_model.hh.

References mass_body.

8.4.4 Friends And Related Function Documentation

8.4.4.1 void init_attrjeod__FacetStateInfo ( ) [friend]

8.4.4.2 friend class InputProcessor [friend]

Definition at line 62 of file surface_model.hh.

8.4.5 Field Documentation

8.4.5.1 MassBody∗ jeod::FacetStateInfo::mass_body

The MassBody object whose state, relative and w.r.t.

the MassBody named in struct_body_name, is being calculatedtrick_io(∗∗)

Definition at line 74 of file surface_model.hh.

Referenced by operator==(), and jeod::SurfaceModel::update_articulation().

8.4.5.2 MassPointState jeod::FacetStateInfo::mass_state

The resulting relative mass point state between the structural body named in struct_body_name and the MassBody pointed to in this structure's mass_body.

trick_io(∗∗)

Definition at line 68 of file surface_model.hh.

Referenced by jeod::SurfaceModel::update_articulation().

The documentation for this struct was generated from the following file:

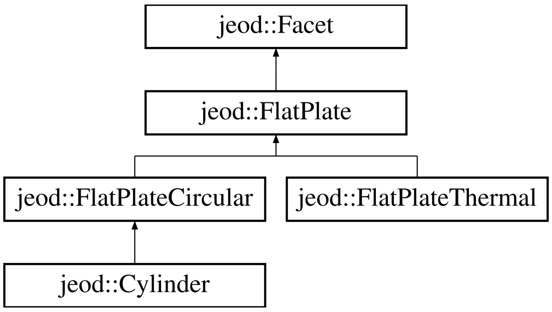
- surface_model.hh

8.5 jeod::FlatPlate Class Reference

A FlatPlate implementation of Facet.

`#include <flat_plate.hh>`

Inheritance diagram for jeod::FlatPlate:



Public Member Functions

- FlatPlate ()

  Default Constructor.

- virtual ∼FlatPlate ()

  Destructor.

Data Fields

- double normal [3]

  normal of the plate, pointing outward of the craft, with respect to the vehicle structural frame.
- double local_normal [3]

  The normal of the plate with respect to the structural frame associated with the mass body named in mass_body_name.

Protected Member Functions

- virtual void update_articulation_internal ()

Private Member Functions

- FlatPlate & operator= (const FlatPlate &rhs)
- FlatPlate (const FlatPlate &rhs)

Friends

- class InputProcessor
- void init_attrjeod__FlatPlate ()

Additional Inherited Members

8.5.1 Detailed Description

A FlatPlate implementation of Facet.

Definition at line 49 of file flat_plate.hh.

8.5.2 Constructor & Destructor Documentation

8.5.2.1 jeod::FlatPlate::FlatPlate (void)

Default Constructor.

Definition at line 42 of file flat_plate.cc.

References local_normal, and normal.

8.5.2.2 jeod::FlatPlate::∼FlatPlate (void) [virtual]

Destructor.

Definition at line 55 of file flat_plate.cc.

8.5.2.3 jeod::FlatPlate::FlatPlate (const FlatPlate & *rhs*) [private]

8.5.3 Member Function Documentation

8.5.3.1 FlatPlate& jeod::FlatPlate::operator= (const FlatPlate & *rhs*) [private]

8.5.3.2 void jeod::FlatPlate::update_articulation_internal (void) [protected], [virtual]

Reimplemented from jeod::Facet.

Definition at line 71 of file flat_plate.cc.

References local_normal, jeod::Facet::mass_rel_struct, normal, and jeod::Facet::update_articulation_internal().

8.5.4 Friends And Related Function Documentation

8.5.4.1 void init_attrjeod__FlatPlate ( ) [friend]

8.5.4.2 friend class InputProcessor [friend]

Definition at line 51 of file flat_plate.hh.

8.5.5 Field Documentation

8.5.5.1 double jeod::FlatPlate::local_normal[3]

The normal of the plate with respect to the structural frame associated with the mass body named in mass_body_-name.

trick_units(–)

Definition at line 77 of file flat_plate.hh.

Referenced by FlatPlate(), and update_articulation_internal().

8.5.5.2 double jeod::FlatPlate::normal[3]

normal of the plate, pointing outward of the craft, with respect to the vehicle structural frame.

If the mass tying functionality is turned on, this will be in the structural frame associated with the mass body named in struct_mass_name. If mass tying functionaity is not turned on, this parameter should be set directly. If it is turned on, then the local_normal should be set and this variable should be automatically calculated.trick_units(–)

Definition at line 71 of file flat_plate.hh.

Referenced by FlatPlate(), and update_articulation_internal().

The documentation for this class was generated from the following files:

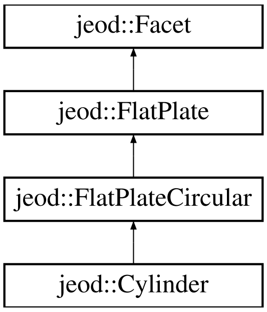
- flat_plate.hh
- flat_plate.cc

8.6 jeod::FlatPlateCircular Class Reference

An circular flat plate implementation of Facet.

`#include <flat_plate_circular.hh>`

Inheritance diagram for jeod::FlatPlateCircular:



Public Member Functions

- FlatPlateCircular ()

  Default Constructor.
- virtual ∼FlatPlateCircular ()

  Destructor.

Data Fields

- double radius

  Radius of the plate.

Private Member Functions

- FlatPlateCircular & operator= (const FlatPlateCircular &rhs)
- FlatPlateCircular (const FlatPlateCircular &rhs)

Friends

- class InputProcessor
- void init_attrjeod__FlatPlateCircular ()

Additional Inherited Members

8.6.1 Detailed Description

An circular flat plate implementation of Facet.

Definition at line 42 of file flat_plate_circular.hh.

8.6.2 Constructor & Destructor Documentation

8.6.2.1 jeod::FlatPlateCircular::FlatPlateCircular (void)

Default Constructor.

Definition at line 42 of file flat_plate_circular.cc.

8.6.2.2 jeod::FlatPlateCircular::∼FlatPlateCircular (void) [virtual]

Destructor.

Definition at line 54 of file flat_plate_circular.cc.

8.6.2.3 jeod::FlatPlateCircular::FlatPlateCircular (const **FlatPlateCircular** & *rhs*) [private]

8.6.3 Member Function Documentation

8.6.3.1 **FlatPlateCircular**& jeod::FlatPlateCircular::operator= (const **FlatPlateCircular** & *rhs*) [private]

8.6.4 Friends And Related Function Documentation

8.6.4.1 void init_attrjeod__FlatPlateCircular ( ) [friend]

8.6.4.2 friend class InputProcessor [friend]

Definition at line 44 of file flat_plate_circular.hh.

8.6.5 Field Documentation

8.6.5.1 double jeod::FlatPlateCircular::radius

Radius of the plate.

trick_units(m)

Definition at line 57 of file flat_plate_circular.hh.

The documentation for this class was generated from the following files:

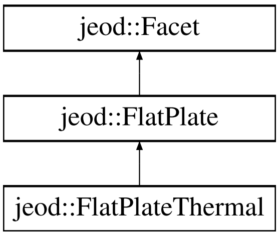
- flat_plate_circular.hh
- flat_plate_circular.cc

8.7 jeod::FlatPlateThermal Class Reference

A FlatPlate implementation of Facet, with thermal information.

`#include <flat_plate_thermal.hh>`

Inheritance diagram for jeod::FlatPlateThermal:



Public Member Functions

- FlatPlateThermal ()

  DefaultConstructor.

- virtual ∼FlatPlateThermal ()

  Destructor.

Data Fields

- ThermalFacetRider thermal

  Thermal characteristics rider.

Private Member Functions

- FlatPlateThermal & operator= (const FlatPlateThermal &rhs)
- FlatPlateThermal (const FlatPlateThermal &rhs)

Friends

- class InputProcessor
- void init_attrjeod__FlatPlateThermal ()

Additional Inherited Members

8.7.1 Detailed Description

A FlatPlate implementation of Facet, with thermal information.

Definition at line 49 of file flat_plate_thermal.hh.

8.7.2 Constructor & Destructor Documentation

8.7.2.1 jeod::FlatPlateThermal::FlatPlateThermal (void)

DefaultConstructor.

Definition at line 42 of file flat_plate_thermal.cc.

8.7.2.2 jeod::FlatPlateThermal::∼FlatPlateThermal (void) [virtual]

Destructor.

Definition at line 53 of file flat_plate_thermal.cc.

8.7.2.3 jeod::FlatPlateThermal::FlatPlateThermal (const **FlatPlateThermal** & *rhs*) [private]

8.7.3 Member Function Documentation

8.7.3.1 **FlatPlateThermal**& jeod::FlatPlateThermal::operator= (const **FlatPlateThermal** & *rhs*) [private]

8.7.4 Friends And Related Function Documentation

8.7.4.1 void init_attrjeod__FlatPlateThermal ( ) [friend]

8.7.4.2 friend class InputProcessor [friend]

Definition at line 51 of file flat_plate_thermal.hh.

8.7.5 Field Documentation

8.7.5.1 ThermalFacetRider jeod::FlatPlateThermal::thermal

Thermal characteristics rider.

trick_units(–)

Definition at line 64 of file flat_plate_thermal.hh.

The documentation for this class was generated from the following files:

- flat_plate_thermal.hh
- flat_plate_thermal.cc

8.8 jeod::InteractionFacet Class Reference

A base class for an interaction specific facet.

```
#include <interaction_facet.hh>
```

Public Member Functions

- InteractionFacet ()

  Default constructor.
- virtual ∼InteractionFacet ()

  Destructor.

Data Fields

- double force [3]

  The force on the facet caused by the environment interaction.
- double torque [3]

  The torque on the facet caused by the environment interaction.
- Facet ∗ base_facet

  The original facet from which this interaction facet was created.

Private Member Functions

- InteractionFacet & operator= (const InteractionFacet &rhs)
- InteractionFacet (const InteractionFacet &rhs)

Friends

- class InputProcessor
- void init_attrjeod__InteractionFacet ()

8.8.1 Detailed Description

A base class for an interaction specific facet.

Definition at line 50 of file interaction_facet.hh.

8.8.2 Constructor & Destructor Documentation

8.8.2.1 jeod::InteractionFacet::InteractionFacet (void)

Default constructor.

Definition at line 49 of file interaction_facet.cc.

References force, and torque.

8.8.2.2 jeod::InteractionFacet::∼InteractionFacet (void) [virtual]

Destructor.

Definition at line 64 of file interaction_facet.cc.

8.8.2.3 jeod::InteractionFacet::InteractionFacet (const InteractionFacet & *rhs*) [private]

8.8.3 Member Function Documentation

8.8.3.1 InteractionFacet& jeod::InteractionFacet::operator= (const InteractionFacet & *rhs*) [private]

8.8.4 Friends And Related Function Documentation

8.8.4.1 void init_attrjeod__InteractionFacet ( ) [friend]

8.8.4.2 friend class InputProcessor [friend]

Definition at line 52 of file interaction_facet.hh.

8.8.5 Field Documentation

8.8.5.1 Facet∗ jeod::InteractionFacet::base_facet

The original facet from which this interaction facet was created.

trick_units(–)

Definition at line 75 of file interaction_facet.hh.

8.8.5.2 double jeod::InteractionFacet::force[3]

The force on the facet caused by the environment interaction.

trick_units(N)

Definition at line 65 of file interaction_facet.hh.

Referenced by InteractionFacet().

8.8.5.3 double jeod::InteractionFacet::torque[3]

The torque on the facet caused by the environment interaction.

trick_units(N∗m)

Definition at line 70 of file interaction_facet.hh.

Referenced by InteractionFacet().

The documentation for this class was generated from the following files:

- interaction_facet.hh
- interaction_facet.cc

8.9 jeod::InteractionFacetFactory Class Reference

A factory to create a specific interaction facet from a general facet.

```
#include <interaction_facet_factory.hh>
```

Public Member Functions

- InteractionFacetFactory ()

  Default Constructor.
- virtual ∼InteractionFacetFactory ()

  Destructor.
- virtual InteractionFacet ∗ create_facet (Facet ∗facet, FacetParams ∗params)=0

  A pure virtual function that creates a specific interaction facet from a base facet with the given FacetParams.
- virtual bool is_correct_factory (Facet ∗facet)=0

  A pure virtual function.

Protected Attributes

- bool trick_bool

  Unused data field to expedite dynamic allocation in Trick environment.

Private Member Functions

- InteractionFacetFactory & operator= (const InteractionFacetFactory &rhs)
- InteractionFacetFactory (const InteractionFacetFactory &rhs)

Friends

- class InputProcessor
- void init_attrjeod__InteractionFacetFactory ()

8.9.1 Detailed Description

A factory to create a specific interaction facet from a general facet.

Definition at line 57 of file interaction_facet_factory.hh.

8.9.2 Constructor & Destructor Documentation

8.9.2.1 jeod::InteractionFacetFactory::InteractionFacetFactory (void)

Default Constructor.

Definition at line 44 of file interaction_facet_factory.cc.

8.9.2.2 jeod::InteractionFacetFactory::∼InteractionFacetFactory (void) [virtual]

Destructor.

Definition at line 58 of file interaction_facet_factory.cc.

8.9.2.3 jeod::InteractionFacetFactory::InteractionFacetFactory (const **InteractionFacetFactory** & *rhs*) [private]

8.9.3 Member Function Documentation

8.9.3.1 virtual **InteractionFacet**∗ jeod::InteractionFacetFactory::create_facet (**Facet** ∗ *facet*, **FacetParams** ∗ *params*) [pure virtual]

A pure virtual function that creates a specific interaction facet from a base facet with the given FacetParams.

This defines interface for all classes that inherit from InteractionFacetFactory

Returns

The new interaction facet

Parameters

in	*facet*	The facet the InteractionFacet is created from
in	*params*	The parameter object to be added.

8.9.3.2 virtual bool jeod::InteractionFacetFactory::is_correct_factory (**Facet** ∗ *facet*) [pure virtual]

A pure virtual function.

Returns true or false: is the given facet the type this factory is meant to use?

Returns

true or false. Is the given facet the correct type for this factory?

Parameters

in	*facet*	The facet that is being checked

8.9.3.3 **InteractionFacetFactory**& jeod::InteractionFacetFactory::operator= (const **InteractionFacetFactory** & *rhs*) [private]

8.9.4 Friends And Related Function Documentation

8.9.4.1 void init_attrjeod__InteractionFacetFactory ( ) [friend]

8.9.4.2 friend class InputProcessor [friend]

Definition at line 59 of file interaction_facet_factory.hh.

8.9.5 Field Documentation

8.9.5.1 bool jeod::InteractionFacetFactory::trick_bool [protected]

Unused data field to expedite dynamic allocation in Trick environment.

trick_units(–)

Definition at line 101 of file interaction_facet_factory.hh.

The documentation for this class was generated from the following files:

- interaction_facet_factory.hh
- interaction_facet_factory.cc

8.10 jeod::InteractionSurface Class Reference

A base class for interaction specific surfaces.

```
#include <interaction_surface.hh>
```

Public Member Functions

- InteractionSurface ()

  Default Constructor.
- virtual ∼InteractionSurface ()

  Destructor.
- virtual void accumulate_thermal_sources (void)

  Adds all thermal sources together.
- virtual void thermal_integrator (void)

  Integrates thermal sources to get temperature.
- virtual void allocate_array (unsigned int size)=0

  A pure virtual function that will allocate the array of pointers to the correct interaction facet type, of the given size.
- virtual void allocate_interaction_facet (Facet ∗facet, InteractionFacetFactory ∗factory, FacetParams ∗params, unsigned int index)=0

  A pure virtual function that will allocate the interaction facet, from the given facet, using the given facet parameters, and place it in the allocated array of interaction facets at the given index.

Private Member Functions

- InteractionSurface & operator= (const InteractionSurface &rhs)
- InteractionSurface (const InteractionSurface &rhs)

Friends

- class InputProcessor
- void init_attrjeod__InteractionSurface ()

8.10.1 Detailed Description

A base class for interaction specific surfaces.

Definition at line 55 of file interaction_surface.hh.

8.10.2 Constructor & Destructor Documentation

8.10.2.1 jeod::InteractionSurface::InteractionSurface (void)

Default Constructor.

Definition at line 40 of file interaction_surface.cc.

8.10.2.2 jeod::InteractionSurface::∼InteractionSurface (void) [virtual]

Destructor.

Definition at line 52 of file interaction_surface.cc.

8.10.2.3 jeod::InteractionSurface::InteractionSurface (const InteractionSurface & *rhs*) [private]

8.10.3 Member Function Documentation

8.10.3.1 virtual void jeod::InteractionSurface::accumulate_thermal_sources (void) [inline], [virtual]

Adds all thermal sources together.

Definition at line 76 of file interaction_surface.hh.

8.10.3.2 virtual void jeod::InteractionSurface::allocate_array (unsigned int *size*) [pure virtual]

A pure virtual function that will allocate the array of pointers to the correct interaction facet type, of the given size.

Parameters

in	*size*	Size of the array to be allocated Units: cnt

Referenced by jeod::InteractionSurfaceFactory::create_surface().

8.10.3.3 virtual void jeod::InteractionSurface::allocate_interaction_facet (Facet ∗ *facet,* InteractionFacetFactory ∗ *factory,* FacetParams ∗ *params,* unsigned int *index*) [pure virtual]

A pure virtual function that will allocate the interaction facet, from the given facet, using the given facet parameters, and place it in the allocated array of interaction facets at the given index.

Parameters

in	*facet*	The facet used to create the interaction facet
in	*factory*	The factory used to create the interaction facet
in	*params*	The parameters used to create the interaction facet
in	*index*	Where in the interaction facet array the interaction facet will be placed Units: cnt

Referenced by jeod::InteractionSurfaceFactory::create_surface().

8.10.3.4 InteractionSurface& jeod::InteractionSurface::operator= (const InteractionSurface & *rhs*) [private]

8.10.3.5 virtual void jeod::InteractionSurface::thermal_integrator (void) [inline], [virtual]

Integrates thermal sources to get temperature.

Definition at line 88 of file interaction_surface.hh.

8.10.4 Friends And Related Function Documentation

8.10.4.1 void init_attrjeod__InteractionSurface ( ) [friend]

8.10.4.2 friend class InputProcessor [friend]

Definition at line 57 of file interaction_surface.hh.

The documentation for this class was generated from the following files:

- interaction_surface.hh
- interaction_surface.cc

8.11 jeod::InteractionSurfaceFactory Class Reference

A base class for creating specific interaction surfaces from general surfaces.

```
#include <interaction_surface_factory.hh>
```

Public Member Functions

- InteractionSurfaceFactory ()

  Default Constructor.
- virtual ∼InteractionSurfaceFactory ()

  Destructor.
- virtual void create_surface (SurfaceModel ∗surface, InteractionSurface ∗inter_surface)

  Creates an interaction surface, in the inter_surface parameter, from the given SurfaceModel.
- void create_surface (SurfaceModel &surface, InteractionSurface &inter_surface)

  Convenience version of create_surface which can be called from the input file.
- virtual void add_facet_factory (InteractionFacetFactory ∗to_add)

  Used to add an interaction facet factory for use in the surface factory.
- virtual void add_facet_params (FacetParams ∗to_add)

  Add a set of facet parameters for use in the interaction surface factory.

Data Fields

- JeodPointerVector
  < InteractionFacetFactory >
  ::type factories

  A vector of interaction facet factories to be used.
- JeodPointerVector< FacetParams >
  ::type params

  A vector of FacetParams to be used.

Private Member Functions

- InteractionSurfaceFactory & operator= (const InteractionSurfaceFactory &rhs)
- InteractionSurfaceFactory (const InteractionSurfaceFactory &rhs)

Friends

- class InputProcessor
- void init_attrjeod__InteractionSurfaceFactory ()

8.11.1 Detailed Description

A base class for creating specific interaction surfaces from general surfaces.

Definition at line 56 of file interaction_surface_factory.hh.

8.11.2 Constructor & Destructor Documentation

8.11.2.1 jeod::InteractionSurfaceFactory::InteractionSurfaceFactory (void)

Default Constructor.

Definition at line 61 of file interaction_surface_factory.cc.

References factories, and params.

8.11.2.2 jeod::InteractionSurfaceFactory::∼InteractionSurfaceFactory (void) [virtual]

Destructor.

Definition at line 75 of file interaction_surface_factory.cc.

References factories, and params.

8.11.2.3 jeod::InteractionSurfaceFactory::InteractionSurfaceFactory (const InteractionSurfaceFactory & *rhs*) [private]

8.11.3 Member Function Documentation

8.11.3.1 void jeod::InteractionSurfaceFactory::add_facet_factory (InteractionFacetFactory ∗ *to_add*) [virtual]

Used to add an interaction facet factory for use in the surface factory.

Parameters

in	*to_add*	The interaction facet factory to add

Definition at line 200 of file interaction_surface_factory.cc.

References factories, and jeod::SurfaceModelMessages::setup_error.

8.11.3.2 void jeod::InteractionSurfaceFactory::add_facet_params (FacetParams ∗ *to_add*) [virtual]

Add a set of facet parameters for use in the interaction surface factory.

Parameters

in	*to_add*	The facet parameters to add

Definition at line 222 of file interaction_surface_factory.cc.

References jeod::FacetParams::name, params, and jeod::SurfaceModelMessages::setup_error.

8.11.3.3 void jeod::InteractionSurfaceFactory::create_surface (SurfaceModel ∗ *surface,* InteractionSurface ∗ *inter_surface*) [virtual]

Creates an interaction surface, in the inter_surface parameter, from the given SurfaceModel.

The InteractionSurfaceFactory should contain all necessary InteractionFacetFactories and FacetParams already

Parameters

in	*surface*	The surface model used to create the interaction surface

out	*inter_surface*	Where the interaction surface will be produced

Definition at line 93 of file interaction_surface_factory.cc.

References jeod::InteractionSurface::allocate_array(), jeod::InteractionSurface::allocate_interaction_facet(), jeod::-SurfaceModel::facets, factories, jeod::SurfaceModelMessages::initialization_error, and params.

Referenced by create_surface().

8.11.3.4 void jeod::InteractionSurfaceFactory::create_surface (SurfaceModel & *surface*, InteractionSurface & *inter_surface*) [inline]

Convenience version of create_surface which can be called from the input file.

Parameters

surface	Surface model.
inter_surface	Reference to the interaction surface.

Definition at line 78 of file interaction_surface_factory.hh.

References create_surface().

8.11.3.5 InteractionSurfaceFactory& jeod::InteractionSurfaceFactory::operator= (const InteractionSurfaceFactory & *rhs*) [private]

8.11.4 Friends And Related Function Documentation

8.11.4.1 void init_attrjeod__InteractionSurfaceFactory ( ) [friend]

8.11.4.2 friend class InputProcessor [friend]

Definition at line 58 of file interaction_surface_factory.hh.

8.11.5 Field Documentation

8.11.5.1 JeodPointerVector<InteractionFacetFactory>::type jeod::InteractionSurfaceFactory::factories

A vector of interaction facet factories to be used.

Matched to facets by typetrick_io(**)

Definition at line 87 of file interaction_surface_factory.hh.

Referenced by add_facet_factory(), create_surface(), InteractionSurfaceFactory(), and ∼InteractionSurfaceFactory().

8.11.5.2 JeodPointerVector<FacetParams>::type jeod::InteractionSurfaceFactory::params

A vector of FacetParams to be used.

trick_io(**)

Definition at line 92 of file interaction_surface_factory.hh.

Referenced by add_facet_params(), create_surface(), InteractionSurfaceFactory(), and ∼InteractionSurfaceFactory().

The documentation for this class was generated from the following files:

- interaction_surface_factory.hh

- interaction_surface_factory.cc

8.12 jeod::SurfaceModel Class Reference

A general, non-interaction specific surface that can be used to create surfaces suitable for specific interactions.

```
#include <surface_model.hh>
```

Public Member Functions

- SurfaceModel ()

  Default constructor.
- ∼SurfaceModel ()

  Destructor.
- void add_facets (Facet ∗∗new_facets, unsigned int num_new_facets)
- void add_facet (Facet ∗new_facet)
- void initialize_mass_connections (BaseDynManager &manager)
- void update_articulation ()

Data Fields

- bool articulation_active

  Is the articulation active? If yes, facet information will be updated from the previously supplied mass tree.
- char ∗ struct_body_name

  The name of the MassBody representing the overall structural frame of the vehicle associated with this surface model.
- JeodPointerVector< Facet >::type facets

  The facets that make up the surface.

Protected Attributes

- MassBody ∗ struct_body_ptr

  A pointer to the MassBody named by struct_body_name.
- JeodObjectList< FacetStateInfo >
  ::type articulation_states

  The set of states used to update the articulation of each facet.

Private Member Functions

- SurfaceModel & operator= (const SurfaceModel &rhs)
- SurfaceModel (const SurfaceModel &rhs)

Friends

- class InputProcessor
- void init_attrjeod__SurfaceModel ()

8.12.1 Detailed Description

A general, non-interaction specific surface that can be used to create surfaces suitable for specific interactions.

Definition at line 114 of file surface_model.hh.

8.12.2 Constructor & Destructor Documentation

8.12.2.1 jeod::SurfaceModel::SurfaceModel (void)

Default constructor.

Definition at line 57 of file surface_model.cc.

References articulation_states, and facets.

8.12.2.2 jeod::SurfaceModel::∼SurfaceModel (void)

Destructor.

Definition at line 77 of file surface_model.cc.

References articulation_states, and facets.

8.12.2.3 jeod::SurfaceModel::SurfaceModel (const SurfaceModel & *rhs*) [private]

8.12.3 Member Function Documentation

8.12.3.1 void jeod::SurfaceModel::add_facet (Facet ∗ *new_facet*)

Definition at line 125 of file surface_model.cc.

References facets, and jeod::SurfaceModelMessages::setup_error.

8.12.3.2 void jeod::SurfaceModel::add_facets (Facet ∗∗ *new_facets,* unsigned int *num_new_facets*)

Definition at line 90 of file surface_model.cc.

References facets, and jeod::SurfaceModelMessages::setup_error.

8.12.3.3 void jeod::SurfaceModel::initialize_mass_connections (BaseDynManager & *manager*)

Definition at line 150 of file surface_model.cc.

References articulation_states, facets, jeod::SurfaceModelMessages::initialization_error, struct_body_name, and struct_body_ptr.

8.12.3.4 SurfaceModel& jeod::SurfaceModel::operator= (const SurfaceModel & *rhs*) [private]

8.12.3.5 void jeod::SurfaceModel::update_articulation (void)

Definition at line 212 of file surface_model.cc.

References articulation_active, articulation_states, facets, jeod::FacetStateInfo::mass_body, jeod::FacetStateInfo::mass_state, jeod::SurfaceModelMessages::runtime_error, struct_body_name, and struct_body_ptr.

8.12.4 Friends And Related Function Documentation

8.12.4.1 void init_attrjeod__SurfaceModel ( ) [friend]

8.12.4.2 friend class InputProcessor [friend]

Definition at line 116 of file surface_model.hh.

8.12.5 Field Documentation

8.12.5.1 bool jeod::SurfaceModel::articulation_active

Is the articulation active? If yes, facet information will be updated from the previously supplied mass tree.

If not, nothing will update. This defaults to falsetrick_units(–)

Definition at line 131 of file surface_model.hh.

Referenced by update_articulation().

8.12.5.2 JeodObjectList<FacetStateInfo>::type jeod::SurfaceModel::articulation_states [protected]

The set of states used to update the articulation of each facet.

trick_io(∗∗)

Definition at line 172 of file surface_model.hh.

Referenced by initialize_mass_connections(), SurfaceModel(), update_articulation(), and ∼SurfaceModel().

8.12.5.3 JeodPointerVector<Facet>::type jeod::SurfaceModel::facets

The facets that make up the surface.

trick_io(∗∗)

Definition at line 154 of file surface_model.hh.

Referenced by add_facet(), add_facets(), jeod::InteractionSurfaceFactory::create_surface(), initialize_mass_connections(), SurfaceModel(), update_articulation(), and ∼SurfaceModel().

8.12.5.4 char∗ jeod::SurfaceModel::struct_body_name

The name of the MassBody representing the overall structural frame of the vehicle associated with this surface model.

All states of all contained facets will be relative to the structural frame of this MassBody. This name is only required for specific applications, such as contact and articulationtrick_units(–)

Definition at line 149 of file surface_model.hh.

Referenced by initialize_mass_connections(), and update_articulation().

8.12.5.5 MassBody∗ jeod::SurfaceModel::struct_body_ptr [protected]

A pointer to the MassBody named by struct_body_name.

This pointer will be set, using struct_body_name, by searching the DynManager object supplied to the initialize_mass_connections function. This pointer is only used for specific applications, such as contact and articulationtrick_units(–)

Definition at line 166 of file surface_model.hh.

Referenced by initialize_mass_connections(), and update_articulation().

The documentation for this class was generated from the following files:

- surface_model.hh
- surface_model.cc

8.13 jeod::SurfaceModelMessages Class Reference

Messages associated with the use of the surface model.

`#include <surface_model_messages.hh>`

Static Public Attributes

- static char const ∗ initialization_error

  Represents an error in initialization.
- static char const ∗ setup_error

  Represents an error in setup of the surface model.
- static char const ∗ runtime_error

  Represents an error during the runtime of the surface model.

Private Member Functions

- SurfaceModelMessages (void)
- SurfaceModelMessages (const SurfaceModelMessages &rhs)
- SurfaceModelMessages & operator= (const SurfaceModelMessages &rhs)

Friends

- class InputProcessor
- void init_attrjeod__SurfaceModelMessages ()

8.13.1 Detailed Description

Messages associated with the use of the surface model.

Definition at line 54 of file surface_model_messages.hh.

8.13.2 Constructor & Destructor Documentation

8.13.2.1 jeod::SurfaceModelMessages::SurfaceModelMessages (void) [private]

8.13.2.2 jeod::SurfaceModelMessages::SurfaceModelMessages (const SurfaceModelMessages & *rhs*) [private]

8.13.3 Member Function Documentation

8.13.3.1 SurfaceModelMessages& jeod::SurfaceModelMessages::operator= (const SurfaceModelMessages & *rhs*) [private]

8.13.4 Friends And Related Function Documentation

8.13.4.1 void init_attrjeod__SurfaceModelMessages ( ) [friend]

8.13.4.2 friend class InputProcessor [friend]

Definition at line 56 of file surface_model_messages.hh.

8.13.5 Field Documentation

8.13.5.1 char const * jeod::SurfaceModelMessages::initialization_error [static]

Initial value:

```
=
    "utils/surface_model/"  "initialization_error"
```

Represents an error in initialization.

trick_units(–)

Definition at line 67 of file surface_model_messages.hh.

Referenced by jeod::InteractionSurfaceFactory::create_surface(), jeod::Facet::initialize_mass_connection(), jeod::SurfaceModel::initialize_mass_connections(), and jeod::Facet::update_articulation().

8.13.5.2 char const * jeod::SurfaceModelMessages::runtime_error [static]

Initial value:

```
=
    "utils/surface_model/"  "runtime_error"
```

Represents an error during the runtime of the surface model.

trick_units(–)

Definition at line 77 of file surface_model_messages.hh.

Referenced by jeod::SurfaceModel::update_articulation().

8.13.5.3 char const * jeod::SurfaceModelMessages::setup_error [static]

Initial value:

```
=
    "utils/surface_model/"  "setup_error"
```

Represents an error in setup of the surface model.

trick_units(–)

Definition at line 72 of file surface_model_messages.hh.

Referenced by jeod::SurfaceModel::add_facet(), jeod::InteractionSurfaceFactory::add_facet_factory(), jeod::InteractionSurfaceFactory::add_facet_params(), and jeod::SurfaceModel::add_facets().

The documentation for this class was generated from the following files:

- surface_model_messages.hh
- surface_model_messages.cc

Chapter 9

File Documentation

9.1 class_declarations.hh File Reference

Forward declarations of classes defined for JEOD 2.0 surface model.

Namespaces

- jeod

  Namespace jeod.

9.1.1 Detailed Description

Forward declarations of classes defined for JEOD 2.0 surface model.

Definition in file class_declarations.hh.

9.2 cylinder.cc File Reference

cylinders for use in the surface model

```
#include "../include/cylinder.hh"
#include "utils/math/include/vector3.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.2.1 Detailed Description

cylinders for use in the surface model

Definition in file cylinder.cc.

9.3 cylinder.hh File Reference

cylinders for use in the surface model and the contact model

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "flat_plate_circular.hh"
```

Data Structures

- class jeod::Cylinder

  An cylinder implementation of Facet.

Namespaces

- jeod

  Namespace jeod.

9.3.1 Detailed Description

cylinders for use in the surface model and the contact model

Definition in file cylinder.hh.

9.4 facet.cc File Reference

Individual facets for use in the surface model.

```
#include <cstddef>
#include "dynamics/dyn_manager/include/base_dyn_manager.hh"
#include "dynamics/mass/include/mass.hh"
#include "utils/message/include/message_handler.hh"
#include "utils/math/include/vector3.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/surface_model_messages.hh"
#include "../include/facet.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.4.1 Detailed Description

Individual facets for use in the surface model.

Definition in file facet.cc.

9.5 facet.hh File Reference

Individual facets for use in the surface model.

```
#include <string>
#include <utility>
#include "utils/sim_interface/include/jeod_class.hh"
#include "dynamics/mass/include/mass_point_state.hh"
```

Data Structures

- class jeod::Facet

  A general base class for all surface model facets.

Namespaces

- jeod

  Namespace jeod.

9.5.1 Detailed Description

Individual facets for use in the surface model.

Definition in file facet.hh.

9.6 facet_params.cc File Reference

A pure virtual base class for facet parameters, used to create interation facets in the InteractionSurfaceFactorys.

```
#include <cstddef>
#include "../include/facet_params.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.6.1 Detailed Description

A pure virtual base class for facet parameters, used to create interation facets in the InteractionSurfaceFactorys.

Definition in file facet_params.cc.

9.7 facet_params.hh File Reference

A virtual base class for facet parameters, used to create interaction facets in the InteractionSurfaceFactorys.

```
#include <string>
#include <utility>
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::FacetParams

  General base class for all parameters associated with facets in the surface model.

Namespaces

- jeod

  Namespace jeod.

9.7.1 Detailed Description

A virtual base class for facet parameters, used to create interaction facets in the InteractionSurfaceFactorys.

Definition in file facet_params.hh.

9.8 flat_plate.cc File Reference

Flat plates for use in the surface model.

```
#include "../include/flat_plate.hh"
#include "utils/math/include/vector3.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.8.1 Detailed Description

Flat plates for use in the surface model.

Definition in file flat_plate.cc.

9.9 flat_plate.hh File Reference

Flat plates for use in the surface model.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "facet.hh"
```

Data Structures

- class jeod::FlatPlate

  A FlatPlate implementation of Facet.

Namespaces

- jeod

  Namespace jeod.

9.9.1 Detailed Description

Flat plates for use in the surface model.

Definition in file flat_plate.hh.

9.10 flat_plate_circular.cc File Reference

circular flat plates for use in the surface model

```
#include "../include/flat_plate_circular.hh"
#include "utils/math/include/vector3.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.10.1 Detailed Description

circular flat plates for use in the surface model

Definition in file flat_plate_circular.cc.

9.11 flat_plate_circular.hh File Reference

circulat flat plates for use in the surface model and the contact model

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "flat_plate.hh"
```

Data Structures

- class jeod::FlatPlateCircular

  An circular flat plate implementation of Facet.

Namespaces

- jeod

  Namespace jeod.

9.11.1 Detailed Description

circulat flat plates for use in the surface model and the contact model

Definition in file flat_plate_circular.hh.

9.12 flat_plate_thermal.cc File Reference

Flat plates for use in the surface model, with the thermal rider.

```
#include "../include/flat_plate_thermal.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.12.1 Detailed Description

Flat plates for use in the surface model, with the thermal rider.

Definition in file flat_plate_thermal.cc.

9.13 flat_plate_thermal.hh File Reference

Flat plates for use in the surface model, including a thermal portion.

```
#include "interactions/thermal_rider/include/thermal_facet_rider.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include "flat_plate.hh"
```

Data Structures

- class jeod::FlatPlateThermal

  A FlatPlate implementation of Facet, with thermal information.

Namespaces

- jeod

  Namespace jeod.

9.13.1 Detailed Description

Flat plates for use in the surface model, including a thermal portion.

Definition in file flat_plate_thermal.hh.

9.14 interaction_facet.cc File Reference

Individual facets for use with environment interaction models.

```
#include <cstddef>
#include "utils/math/include/vector3.hh"
#include "../include/interaction_facet.hh"
#include "../include/facet.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.14.1 Detailed Description

Individual facets for use with environment interaction models.

Definition in file interaction_facet.cc.

9.15 interaction_facet.hh File Reference

Individual facets for use with specific environment interaction models.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::InteractionFacet

  A base class for an interaction specific facet.

Namespaces

- jeod

  Namespace jeod.

9.15.1 Detailed Description

Individual facets for use with specific environment interaction models.

Definition in file interaction_facet.hh.

9.16 interaction_facet_factory.cc File Reference

Factory that creates an interaction facet, for a specific enviornment interaction model, from a facet model.

```
#include "../include/interaction_facet_factory.hh"
#include "../include/interaction_facet.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.16.1 Detailed Description

Factory that creates an interaction facet, for a specific enviornment interaction model, from a facet model.

Definition in file interaction_facet_factory.cc.

9.17 interaction_facet_factory.hh File Reference

Factory that creates an interaction facet, for a specific environment interaction model, from a facet model.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::InteractionFacetFactory

  A factory to create a specific interaction facet from a general facet.

Namespaces

- jeod

  Namespace jeod.

9.17.1 Detailed Description

Factory that creates an interaction facet, for a specific environment interaction model, from a facet model. This is a pure virtual class, and the pure virtual functions must be implemented in any instantiable, inheriting class

Definition in file interaction_facet_factory.hh.

9.18 interaction_surface.cc File Reference

Vehicle surface model for general environment interaction models.

```
#include "../include/interaction_surface.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.18.1 Detailed Description

Vehicle surface model for general environment interaction models.

Definition in file interaction_surface.cc.

9.19 interaction_surface.hh File Reference

Vehicle surface model for general environment interaction models.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::InteractionSurface

  A base class for interaction specific surfaces.

Namespaces

- jeod

  Namespace jeod.

9.19.1 Detailed Description

Vehicle surface model for general environment interaction models. This is a pure virtual function and has methods that must be implemented in any inheritied, instantiable class

Definition in file interaction_surface.hh.

9.20 interaction_surface_factory.cc File Reference

Factory that creates an interaction surface, for a specific enviornment interaction model, from a surface model.

```
#include <cstddef>
#include "utils/message/include/message_handler.hh"
#include "utils/memory/include/jeod_alloc.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/interaction_surface_factory.hh"
#include "../include/interaction_facet_factory.hh"
#include "../include/interaction_surface.hh"
#include "../include/facet.hh"
#include "../include/facet_params.hh"
#include "../include/surface_model.hh"
#include "../include/surface_model_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.20.1 Detailed Description

Factory that creates an interaction surface, for a specific enviornment interaction model, from a surface model.

Definition in file interaction_surface_factory.cc.

9.21 interaction_surface_factory.hh File Reference

Factory that creates an interaction surface, for a specific environment interaction model, from a surface model.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "utils/container/include/pointer_vector.hh"
```

Data Structures

- class jeod::InteractionSurfaceFactory

  A base class for creating specific interaction surfaces from general surfaces.

Namespaces

- jeod

  Namespace jeod.

9.21.1 Detailed Description

Factory that creates an interaction surface, for a specific environment interaction model, from a surface model.

Definition in file interaction_surface_factory.hh.

9.22 surface_model.cc File Reference

Vehicle surface model for general environment interaction models.

```
#include <cstddef>
#include <algorithm>
#include "dynamics/dyn_manager/include/base_dyn_manager.hh"
#include "utils/message/include/message_handler.hh"
#include "utils/memory/include/jeod_alloc.hh"
#include "dynamics/mass/include/mass.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/surface_model.hh"
#include "../include/surface_model_messages.hh"
#include "../include/facet.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.22.1 Detailed Description

Vehicle surface model for general environment interaction models.

Definition in file surface_model.cc.

9.23 surface_model.hh File Reference

Vehicle surface model for general environment interaction models.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "utils/container/include/pointer_vector.hh"
#include "utils/container/include/object_vector.hh"
#include "utils/container/include/object_list.hh"
#include "dynamics/mass/include/mass_point_state.hh"
```

Data Structures

- struct jeod::FacetStateInfo

  This is a structure used only in the surface model to aid in relative state calculations for articulation.
- class jeod::SurfaceModel

  A general, non-interaction specific surface that can be used to create surfaces suitable for specific interactions.

Namespaces

- jeod

  Namespace jeod.

9.23.1 Detailed Description

Vehicle surface model for general environment interaction models.

Definition in file surface_model.hh.

9.24 surface_model_messages.cc File Reference

Implement surface_model_messages.

```
#include "../include/surface_model_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define PATH "utils/surface_model/"

9.24.1 Detailed Description

Implement surface_model_messages.

Definition in file surface_model_messages.cc.

9.25 surface_model_messages.hh File Reference

Implement surface_model_messages.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "class_declarations.hh"
```

Data Structures

- class jeod::SurfaceModelMessages

  Messages associated with the use of the surface model.

Namespaces

- jeod

    Namespace jeod.

9.25.1 Detailed Description

Implement surface_model_messages.

Definition in file surface_model_messages.hh.

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