Entity

- handle: unsigned

+ Entity(in handle: unsigned=0)

+ setHandle(in handle: unsigned): void

+ getHandle(): void const

Eigen::Vector3d

parent

Vertex

<<constructor>> Vertex(in x: double, in y: double, in z: double, in handle: unsigned)

<<constructor>> Vertex()

1

VertexCollection

- vertices: std::vector<const Vertex *>

+ VertexCollection(in numberOfVertices: unsigned=0)

+ addVertex(in vertex: Vertex *): void

+ getNumberOfVertices(): unsigned const

+ getVertex(in vertexLocalHandle: unsigned): Vertex cor

+ getVertices(): std::vector<const Vertex *> const

Element

+ getCentroid(): Eigen::Vector3d const

+ getVolume(): double const

+ getShapeFunctionValues(in localCoordinates: Eigen::Vector3d): Eigen::VectorXd const

+ getShapeFunctionDerivatives(in localCoordinates: Eigen::Vector3d): Eigen::MatrixXd const

parent

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child

Element1D

+ dimension: const unsigned=1

Line

Element2D

+ dimension: const unsigned=2

+ getAreaVector(): Eigen::Vector3d const

computeTriangleAreaVector(
in firstPoint: Vertex*,
in secondPoint: Vertex*,
in thirdPoint: Vertex*)
: Eigen::Vector3d const

Element3D

+ dimension: const unsigned=3

Hexaedron

Tetraedron

Pyramid

Prism

Triangle

Quadrangle

Boundary

- name: std::string

- elements: std::vector<Elements *>

+ Boundary(in name: string, in numberOfBoundaryElements: unsigned)

+ addElement(in element: Element&): void

+ getNumberOfElement(): unsigned const

+ getElement(in elementLocalHandle: unsigned): Element const

+ getElements(): const std::vector<Element *> const

parent
child

GridReader

+ CGNS(in fileName: std::string): const GridDat

GridData

+ dimension: unsigned

+ coordinates: Eigen::Matrix<double, Dynamic, 3>

+ triagleConnectivity: Eigen::Matrix<unsigned, Dynamic, 3>

+ quadrangleConnectivity: Eigen::Matrix<unsigned, Dynamic, 4>

GridBuilder

+ build(in gridData: GridData&): const Grid

Grid

+ dimension: unsigned

+ elements: std::vector<Element*>

+ vertices: std::vector<Vertex>