

## Modification of RigidGridMotion to include reference frame and motion chains

We change the `RigidGridMotion_t` to add a more general motion description. This description includes a reference frame (see extension ‘**New structure for definition of Reference Frames**’) and a parent Motion in order to chain motions.

We also extract the translation part of the *OriginLocation*.

The *RigidTranslation* is a translation vector, the origin of motion is the parent reference frame.

```
RigidGridMotion_t :=
{
  List( Descriptor_t Descriptor1 ... DescriptorN ) ;          (o)

  RigidGridMotionType_t RigidGridMotionType ;              (r)

  DataArray_t<real, 2, [PhysicalDimension, 2]> OriginLocation ; (o/d)
  DataArray_t<real, 1, PhysicalDimension> RigidTranslation ; (o/d)
  DataArray_t<real, 1, PhysicalDimension> RigidRotationAngle ; (o/d)
  DataArray_t<real, 1, PhysicalDimension> RigidVelocity ; (o)
  DataArray_t<real, 1, PhysicalDimension> RigidRotationRate ; (o)

  ReferenceFrame_t ParentFrame ; (o/d)
  RigidGridMotion_t ParentMotion ; (o/d)

  DataArray_t<real, 1, PhysicalDimension> RigidRotationAngle ; (o/d)

  List( DataArray_t DataArray1 ... DataArrayN ) ;          (o)

  DataClass_t DataClass ;                                  (o)

  DimensionalUnits_t DimensionalUnits ;                   (o)

  List( UserDefinedData_t UserDefinedData1 ... UserDefinedDataN ) ; (o)
} ;
```

### ▪ *RigidMotion extension requirements list:*

1. The translation is prior to the rotation.
2. If *RigidTranslation* is defined, *OriginLocation* can be suppressed. If *OriginLocation* is kept, it should contain redundant and consistent data with respect to *RigidTranslation* and the *ParentFrame* data.
3. The parent node can be of type `Family_t` or `Zone_t`.