

```

<IMPLEMENTATION-DATA-TYPE>
  <SHORT-NAME>DtImpMyPointer</SHORT-NAME>
  <CATEGORY>DATA_REFERENCE</CATEGORY>
  <SW-DATA-DEF-PROPS>
    <SW-DATA-DEF-PROPS-VARIANTS>
      <SW-DATA-DEF-PROPS-CONDITIONAL>
        <SW-POINTER-TARGET-PROPS>
          <TARGET-CATEGORY>TYPE_REFERENCE</TARGET-CATEGORY>
        <SW-DATA-DEF-PROPS>
          <SW-DATA-DEF-PROPS-VARIANTS>
            <SW-DATA-DEF-PROPS-CONDITIONAL>
              <IMPLEMENTATION-DATA-TYPE-REF DEST="IMPLEMENTATION-DATA-TYPE">
                /ECU1/DtImpMySimpleType
              </IMPLEMENTATION-DATA-TYPE-REF>
            </SW-DATA-DEF-PROPS-CONDITIONAL>
          </SW-DATA-DEF-PROPS-VARIANTS>
        </SW-DATA-DEF-PROPS>
      </SW-POINTER-TARGET-PROPS>
    </SW-DATA-DEF-PROPS-CONDITIONAL>
  </SW-DATA-DEF-PROPS-VARIANTS>
</SW-DATA-DEF-PROPS>
</IMPLEMENTATION-DATA-TYPE>

```

5.4.7.2 Example 2 (Pointer to Constant)

```
typedef P2CONST(void, TYPEDEF, RTE_APPL_DATA) DtImpConstPtr;
```

ARXML syntax of an ImplementationDataType DtImpConstPtr with

- category DATA_REFERENCE
- swPointerTargetProps with
 - category TYPE_REFERENCE
 - SwDataDefProps
 - swImplPolicy set to standard
 - swPointerTargetProps
 - targetCategory set to VALUE
 - swDataDefProps
 - reference to swBaseType void
 - swImplPolicy set to const

```

<IMPLEMENTATION-DATA-TYPE>
  <SHORT-NAME>DtImpConstPtr</SHORT-NAME>
  <CATEGORY>DATA_REFERENCE</CATEGORY>
  <SW-DATA-DEF-PROPS>
    <SW-DATA-DEF-PROPS-VARIANTS>
      <SW-DATA-DEF-PROPS-CONDITIONAL>
        <SW-IMPL-POLICY>STANDARD</SW-IMPL-POLICY>
        <SW-POINTER-TARGET-PROPS>
          <TARGET-CATEGORY>VALUE</TARGET-CATEGORY>
        <SW-DATA-DEF-PROPS>
          <SW-DATA-DEF-PROPS-VARIANTS>
            <SW-DATA-DEF-PROPS-CONDITIONAL>
              <BASE-TYPE-REF DEST="SW-BASE-TYPE">/AUTOSAR_Platform/BaseTypes/void</BASE-TYPE-REF>
              <SW-IMPL-POLICY>CONST</SW-IMPL-POLICY>
            </SW-DATA-DEF-PROPS-CONDITIONAL>
          </SW-DATA-DEF-PROPS-VARIANTS>
        </SW-DATA-DEF-PROPS>
      </SW-POINTER-TARGET-PROPS>
    </SW-DATA-DEF-PROPS-CONDITIONAL>
  </SW-DATA-DEF-PROPS-VARIANTS>
</SW-DATA-DEF-PROPS>
</IMPLEMENTATION-DATA-TYPE>

```

5.4.7.3 Example 3 (Constant Pointer)

```
typedef CONSTP2VAR(void, TYPEDEF, RTE_APPL_DATA) DtImpPtrConst;
```

ARXML syntax of an ImplementationDataType DtImpPtrConst with

5.12 SI Units

SI Units are the seven fundamental dimensions:

Sequence for shortName	Dimension	Unit	Symbol	shortName
1.	length	meter	m	Len
2.	mass	kilogram	kg	M
3.	time	second	s	Ti
4.	electric current	ampere	A	I
5.	thermodynamic temperature	kelvin	K	T
6.	amount of substance	mole	mol	Mol
7.	luminous intensity	candela	cd	Cd

Table 5-54 SI Units

5.13 Physical Dimension (PhysicalDimension)

Physical Dimensions (`PhysicalDimension`) are usually referenced by `Units` (→5.11) and are defined by an exponent (positive or negative) for each of the seven fundamental dimensions (SI Units →5.12).

Example 1, Force: $N = m^1 * kg^1 * s^{-2} * A^0 * K^0 * mol^0 * cd^0 = \frac{kg*m}{s^2}$

Example 2, Torque: $Nm = m^2 * kg^1 * s^{-2} * A^0 * K^0 * mol^0 * cd^0 = \frac{kg*m^2}{s^2}$

Example 3, Speed: $v = m^1 * kg^0 * s^{-1} * A^0 * K^0 * mol^0 * cd^0 = \frac{m}{s}$

Example 4, Voltage: $U = m^2 * kg^1 * s^{-3} * A^{-1} * K^0 * mol^0 * cd^0 = \frac{m^2*kg}{s^3A}$

Note that for the `shortName` of a Physical Dimensions a naming convention (→4.4.2) exists: They are built using a sequence of base physical quantities keyword abbreviations followed by numbers as exponents (“Neg” keyword abbreviation shall be used for negative number).

PhysicalDimension			
Multiplicity kind	Attribute	ARXML tag	Description
[1] ref	<code>shortName</code>	<i>SHORT-NAME</i>	Reference to an <code>Identifier</code> that can be referred to by other <code>ARElements</code> . Naming conventions apply. →4.4
[0..1] aggr	<code>longName</code>	<i>LONG-NAME</i>	Optional <code>MultilanguageLongName</code> of the object. →4.5
[0..1] attr	<code>category</code>	<i>CATEGORY</i>	The <code>category</code> attribute is only one element of the <code>Identifiable</code> parameters. For more details →4.3
[0..1] attr	<code>currentExp</code>	<i>CURRENT-EXP</i>	Optional exponent of electric current.
[0..1] attr	<code>lengthExp</code>	<i>LENGTH-EXP</i>	Optional exponent of length.
[0..1] attr	<code>luminousIntensityExp</code>	<i>LUMINOUS-INTENSITY-EXP</i>	Optional exponent of luminous intensity.
[0..1] attr	<code>massExp</code>	<i>MASS-EXP</i>	Optional exponent of mass.
[0..1] attr	<code>molarAmountExp</code>	<i>MOLAR-AMOUNT-EXP</i>	Optional exponent of amount of substance.
[0..1] attr	<code>temperatureExp</code>	<i>TEMPERATURE-EXP</i>	Optional exponent of thermodynamic temperature.
[0..1] attr	<code>timeExp</code>	<i>TIME-EXP</i>	Optional exponent of the time.

Table 5-55 PhysicalDimension