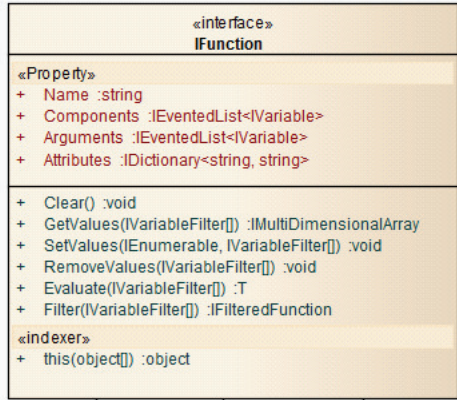


A vector-valued function associates independent variables (arguments) with its dependent variables (components):

$$\vec{F} = [f_1, f_2, \dots, f_n](x_1, x_2, \dots, x_m)$$

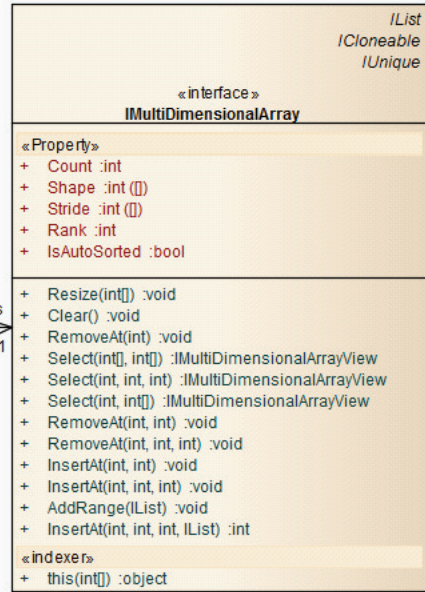
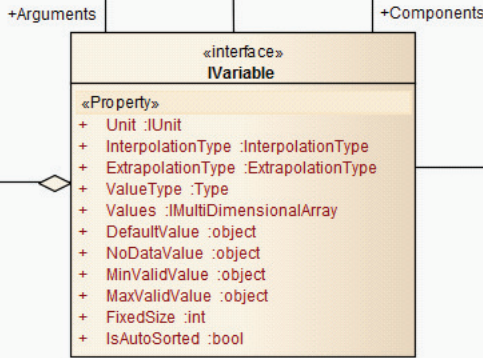
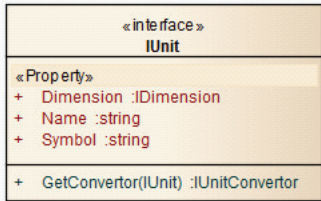
↑ components    ↑ arguments



Any variable representing a physical quantity may have a unit of measure defined:

$$[v] = [m/s]$$

Dimension of a unit is: L/T



Every variable is a function of 0 or more arguments and 1 component:

$$v = (v) \text{ -- independent variable}$$

$$v = (v)(x_1, x_2, \dots, x_m) \text{ -- dependent variable}$$

Variable values are defined as an array, for independent variable  $v$  rank of an array is 1 and for dependent variable  $v(x_1, x_2, \dots, x_m)$  it is equal to number of its arguments  $m$