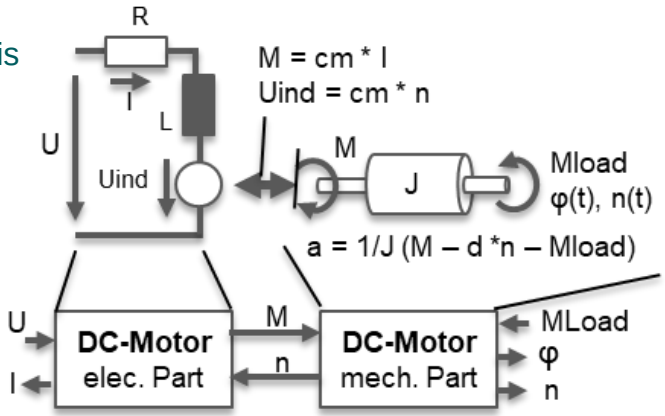
“Traceability and proof of quality of Simulation Tasks”
Example: DC-motor

Engineering/Simulation Task

- Pre-selection of a DC-motor for a mild hybrid application (drive Unit)
- DC-Motor has to accelerate against a Load MLoad = 1 Nm in 1s from 0 to 1000 rad/s. Voltage U = 48 V
- A simple simulation model which contains the basic physical effect is used
- Neglected effects
  - Commutation effects (losses are considered in R)
  - Eddy currents
  - Friction (should be added to Mload)



In / Outputs	Name	Unit	Format	Comment
Elecrical Part DC Motor Model				
Supply Voltage	U	V	Float32	
Current	I	A	Float32	
Motor Torque	M	Nm	Float32	
Mechanical Part DC Motor Model				
Acceleration	a	Rad/s^2	Float32	internal
Rotation speed	n	Rad/s	Float32	
angle	φ	Rad	Float32	
Load Torque	Mload	Nm	Float32	

Parameters	Name	Unit	Format	default Value
Elecrical Part DC Motor Model				
Resistance	R	Ohm	Float32	1
Inductance	L	mH	Float32	1
motor constant	cm	Nm/A	Float32	0,2
Mechanical Part DC Motor Model				
Inertia	J	Kgm^2	Float32	0,002
Damping	d	Nm/rad	Float32	0.001
Friction	Mfr	Nm	Float32	0,01