Required Calculations & Justifications

1. Rack & Pinion (immediate) torque calculation.

2. Research justifying usage of Gears or Pulley.

3. Min. + Req. distance from Motor-Steering_shaft, gear/pulley justification.

4. Required (immediate) torque factor calculation with selected BLDC motor

4.1 *Gear/pulley ratio calculation.*

4.2 *Motor & Steering_shaft - gear/pulley pitch calculation*.

5. Motor-Steering_shaft, placement justification.

6. BLDC motor Mounting_bracket (arrangement & location) justification.

6.1 *BLDC motor Mounting_bracket Model design + CAD + FEA.*

7. Research for gear/pulley belt material.

8. *Requirement* (YES/NO) → *Selection* → *Usage* of tensioner justification.
8.1 Tensioner specs

9. Research justifying selection of gear/pulley belt material.

IF using gear/pulley THEN

10. Gear/pulley type justification.

10.1 ***IF pulley THEN*** *Find motor_pulley pitch & pulley "groove" dimension justification.*

10.2 ***IF gear THEN*** *Find motor_gear teeth "space_width" dimension justification.*

Highlights:

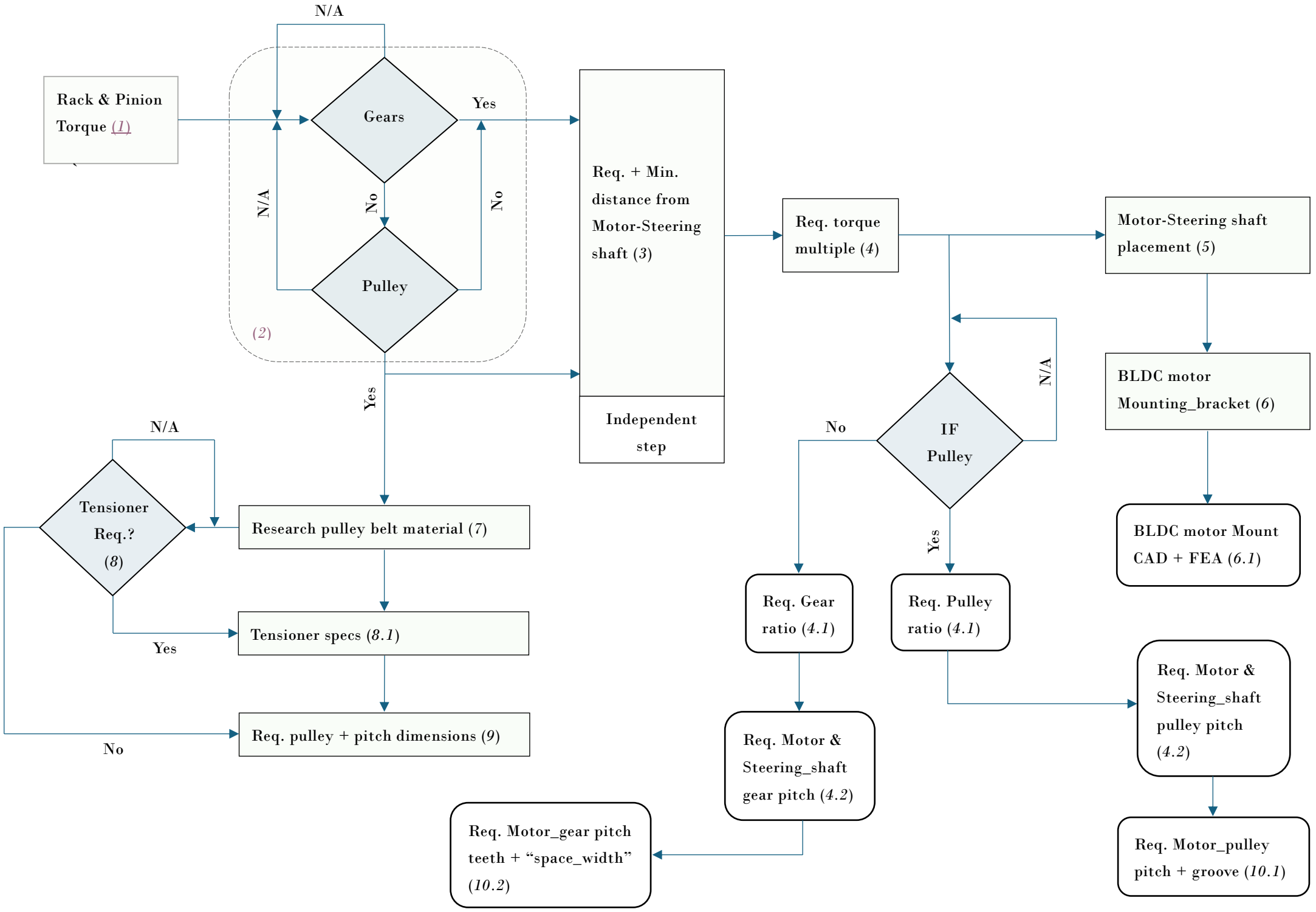
Torque factor: A multiple of the Rack & Pinion (immediate) torque (1.0) after finding the operational torque of the selected BLDC motor.

Motor-Steering_shaft, placement: Placement, or location of the Motor-Steering_shaft coupling in the car. Simply, as in **where to** couple the motor_gear and the steering_shaft gear.

Gear/pulley type: ***IF using gear*** then what type of gear (i.e. spur, helical, bevel) arrangement to use. ***IF using pulley*** then specify the type of pulley, **if needed.**

Note:

Justification can be a quantitative and/or qualitative calculation + analysis.


Rack & Pinion Torque (1)
N/A
Gears
Yes
N/A
No
No
Pulley
(2)
Yes
Req. + Min. distance from Motor-Steering shaft (3)
Independent step
Req. torque multiple (4)
Motor-Steering shaft placement (5)
BLDC motor Mounting_bracket (6)
BLDC motor Mount CAD + FEA (6.1)
IF Pulley
N/A
No
Yes
Req. Gear ratio (4.1)
Req. Pulley ratio (4.1)
Req. Motor & Steering_shaft gear pitch (4.2)
Req. Motor & Steering_shaft pulley pitch (4.2)
Req. Motor_gear pitch teeth + "space_width" (10.2)
Req. Motor_pulley pitch + groove (10.1)
N/A
Tensioner Req.? (8)
Yes
No
Research pulley belt material (7)
Tensioner specs (8.1)
Req. pulley + pitch dimensions (9)