K-Controller

Start Node

Callback Script

Is K defined?

no → Compute K

yes

Push 'K' and dependencies to ROSparam

Push 'K' and dependencies to environment

Controller Execution

Subscribe: Current

Subscribe: Desired

Get 'K' from environment

-K(Desired-Current)

Output angular velocities

Get 'K' and 'K' dependencies from ROSparam

Get 'K' and 'K' dependencies from environment

Did K change?

yes → Update environment 'K' to new ROSparam 'K' → Continue to controller execution

no

Did K depend change?

no

yes

Compute K → Update environment 'K' dependencies to new ROSparam 'K' dependencies
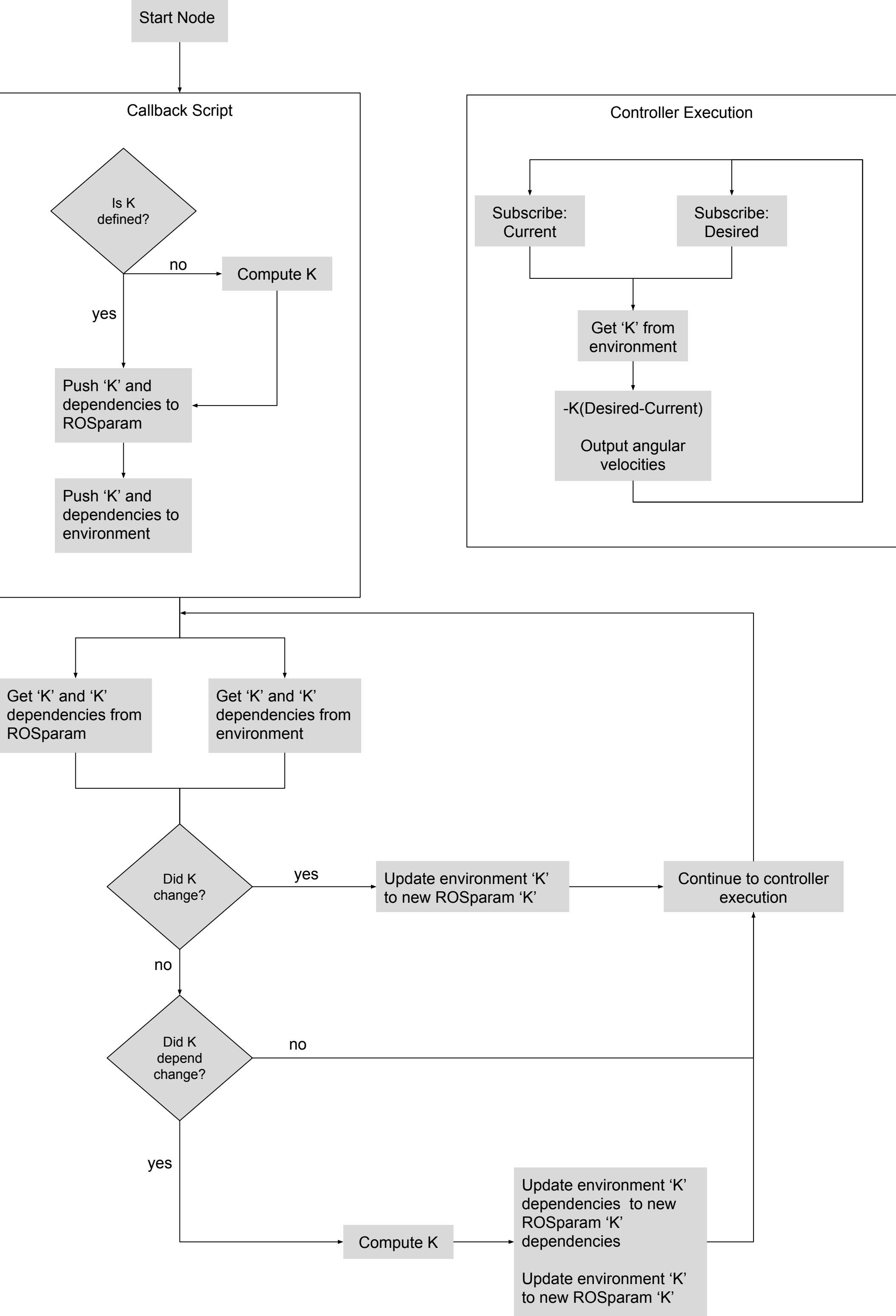
Update environment 'K' to new ROSparam 'K'

NOTE: 'K' does not have to be defined, but dependencies must always be defined.

When 'K' is not defined, it equals zeros(3)

After initialization, K will always be defined, and we can only focus on observing changes in 'K' or its dependencies.