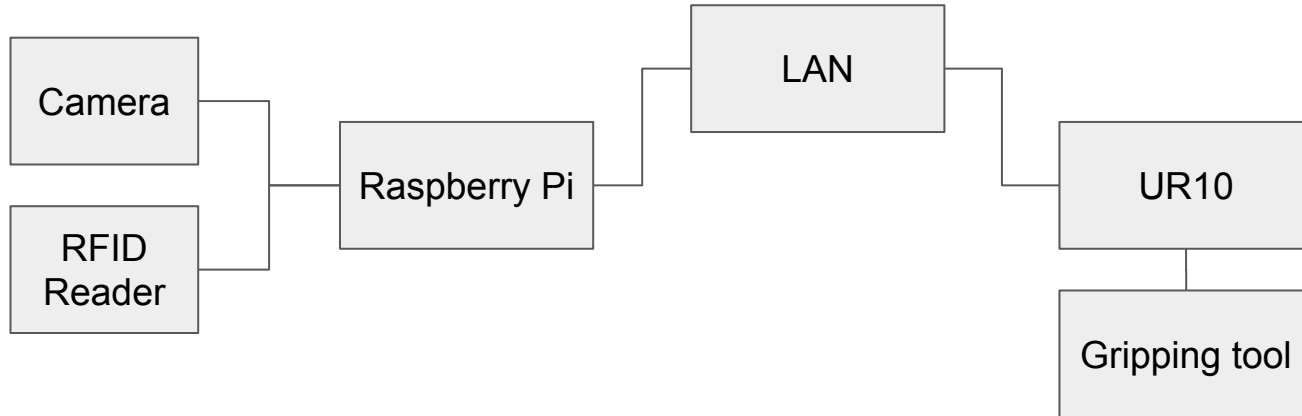
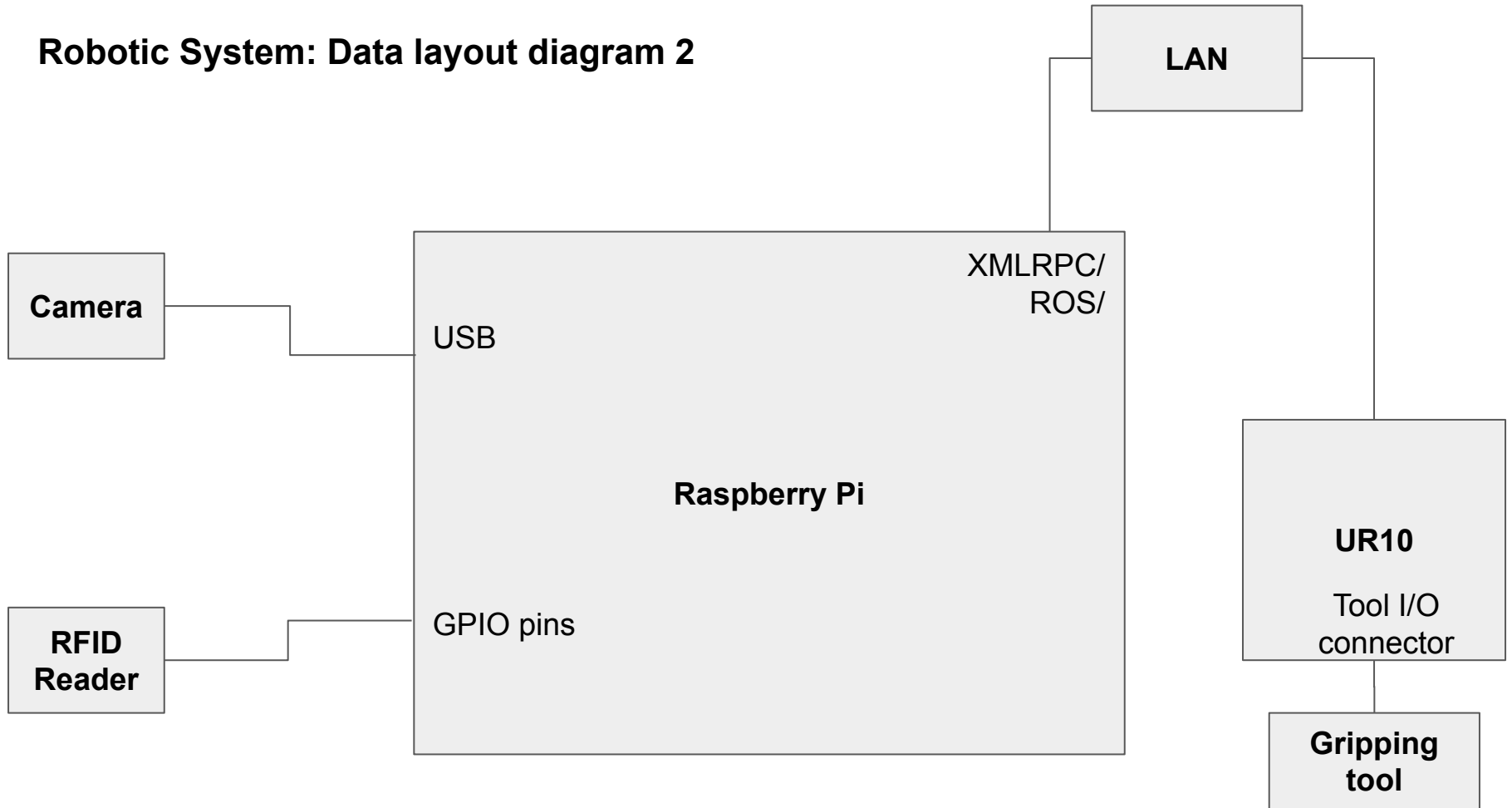


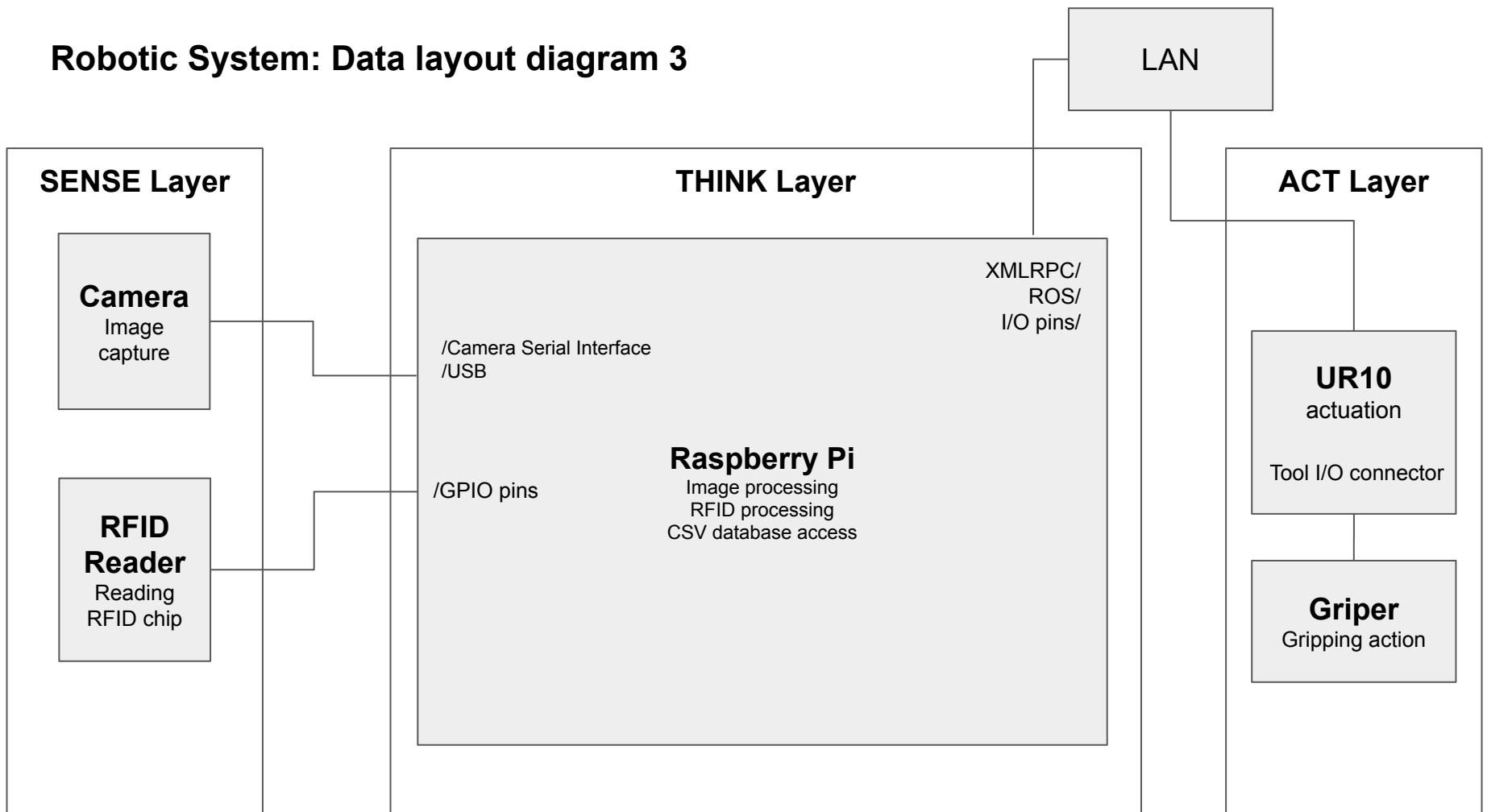
Robotic System: Data layout initial



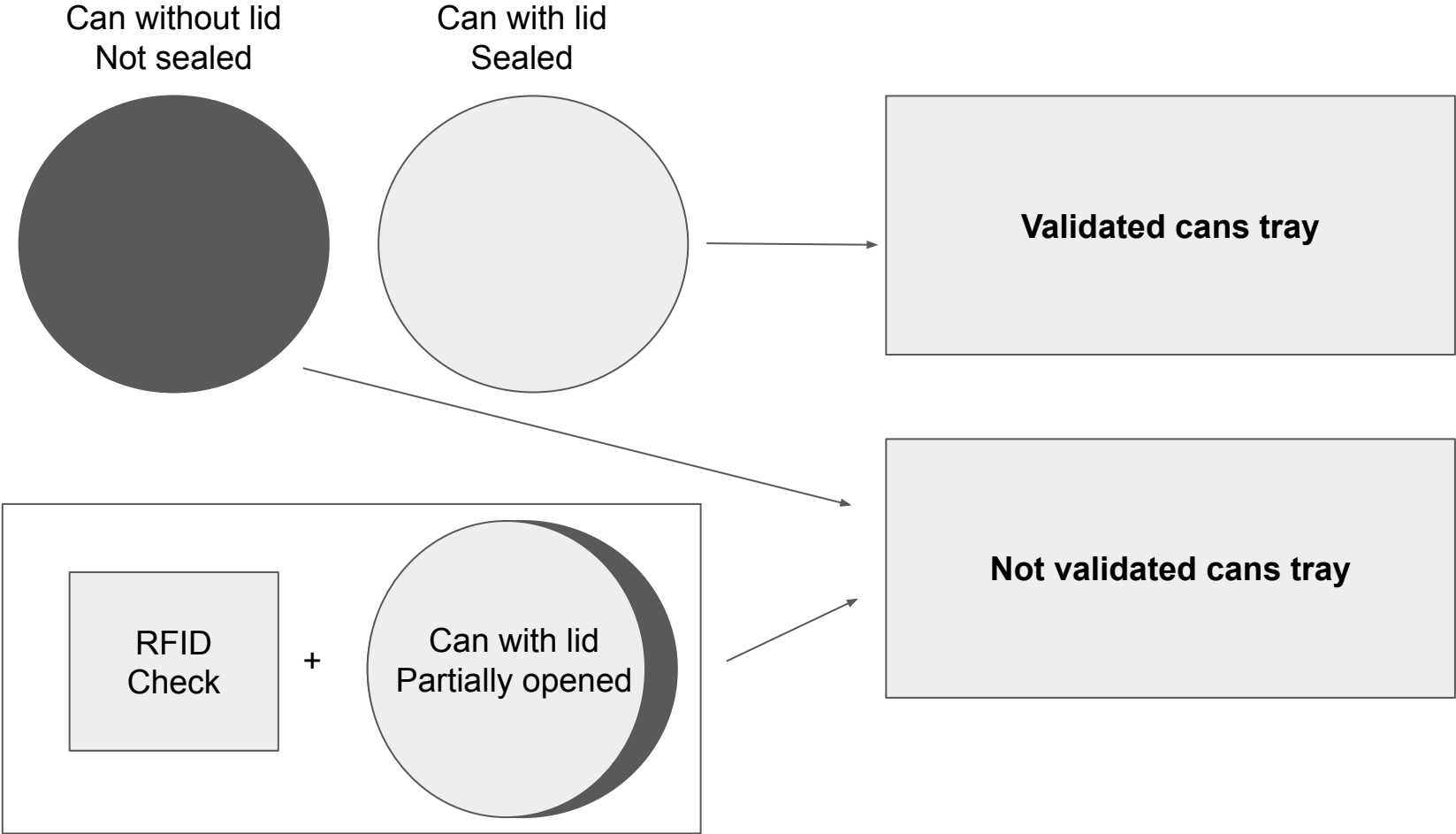
Robotic System: Data layout diagram 2



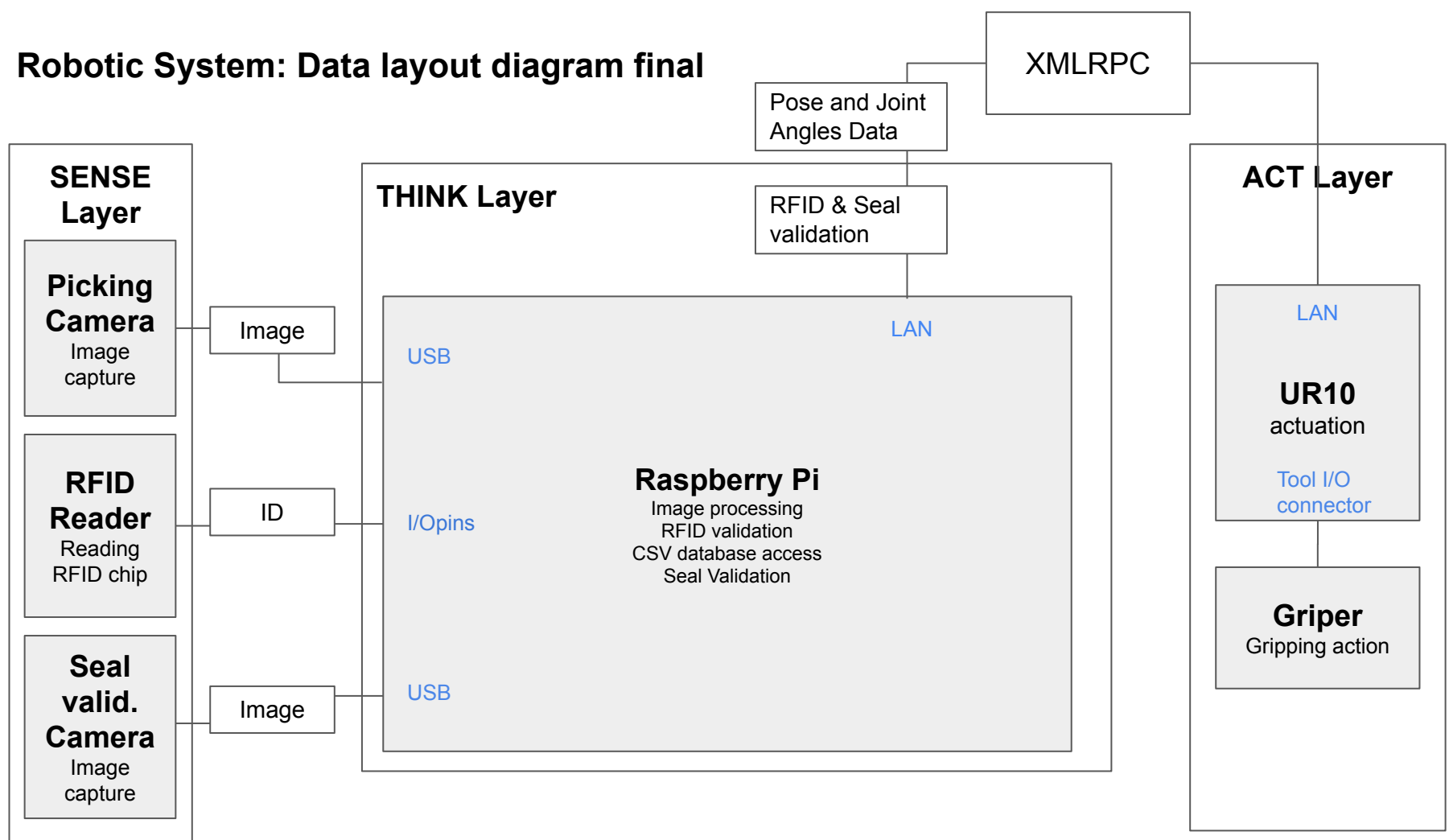
Robotic System: Data layout diagram 3



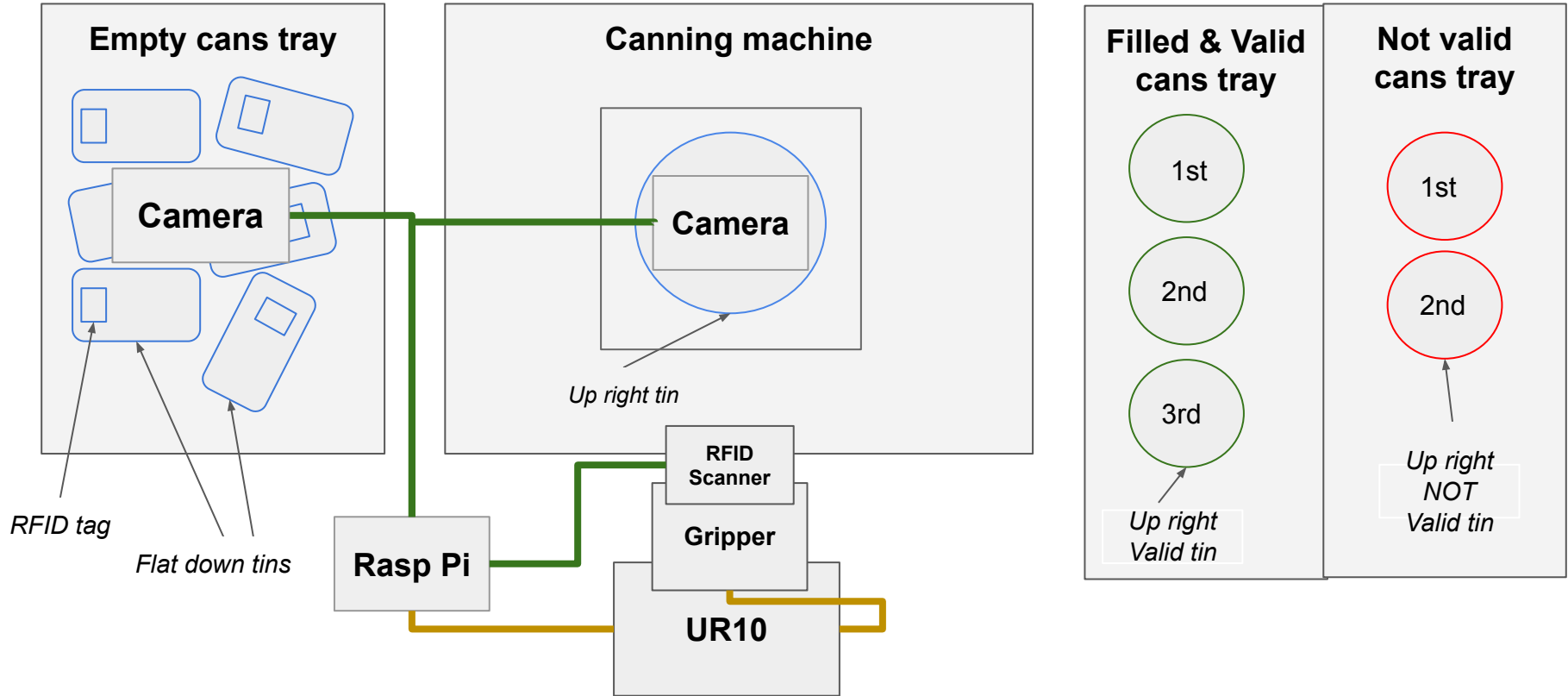
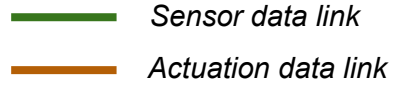
Can diagram: top view



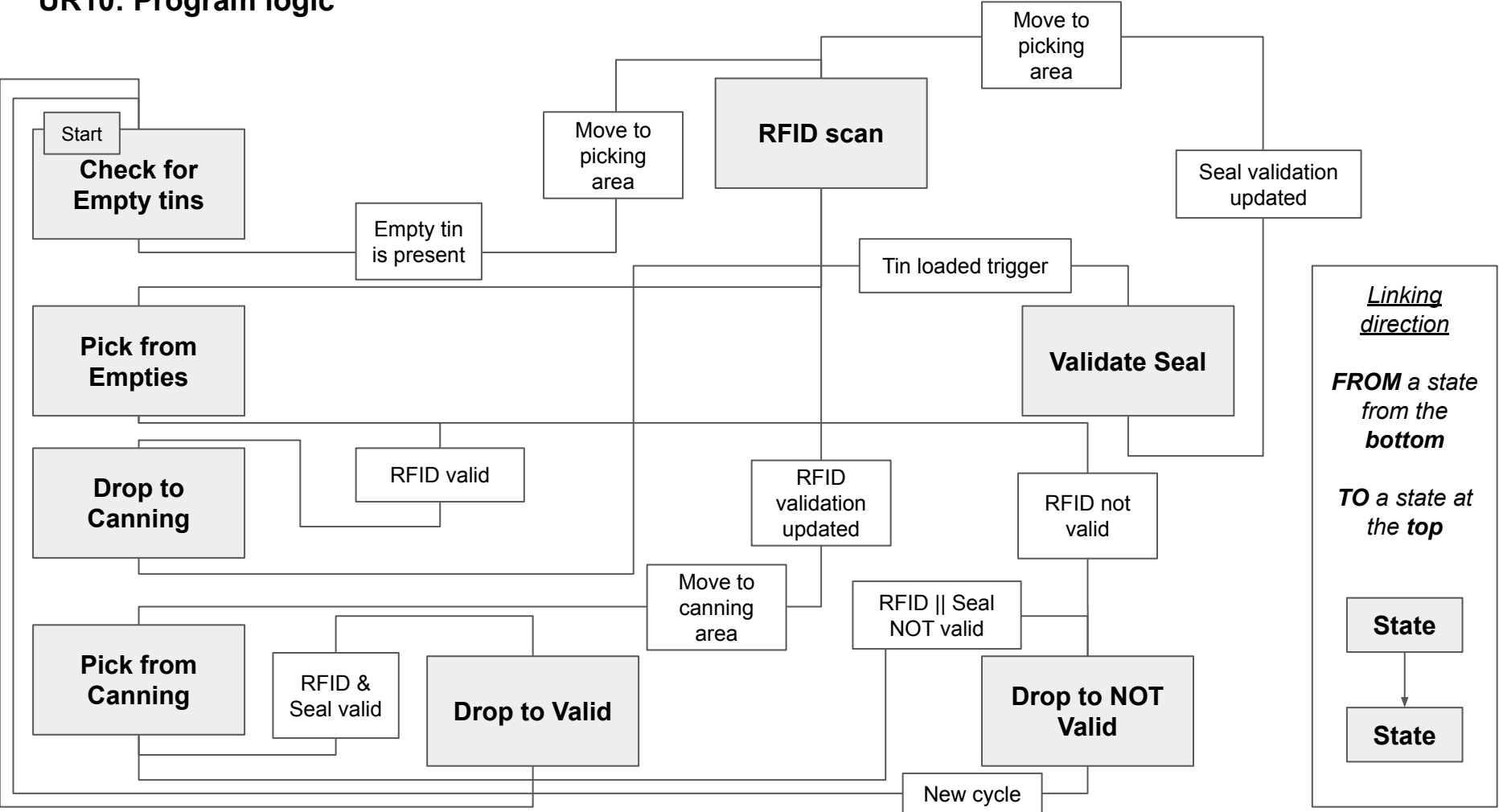
Robotic System: Data layout diagram final



Robotic System: Physical layout



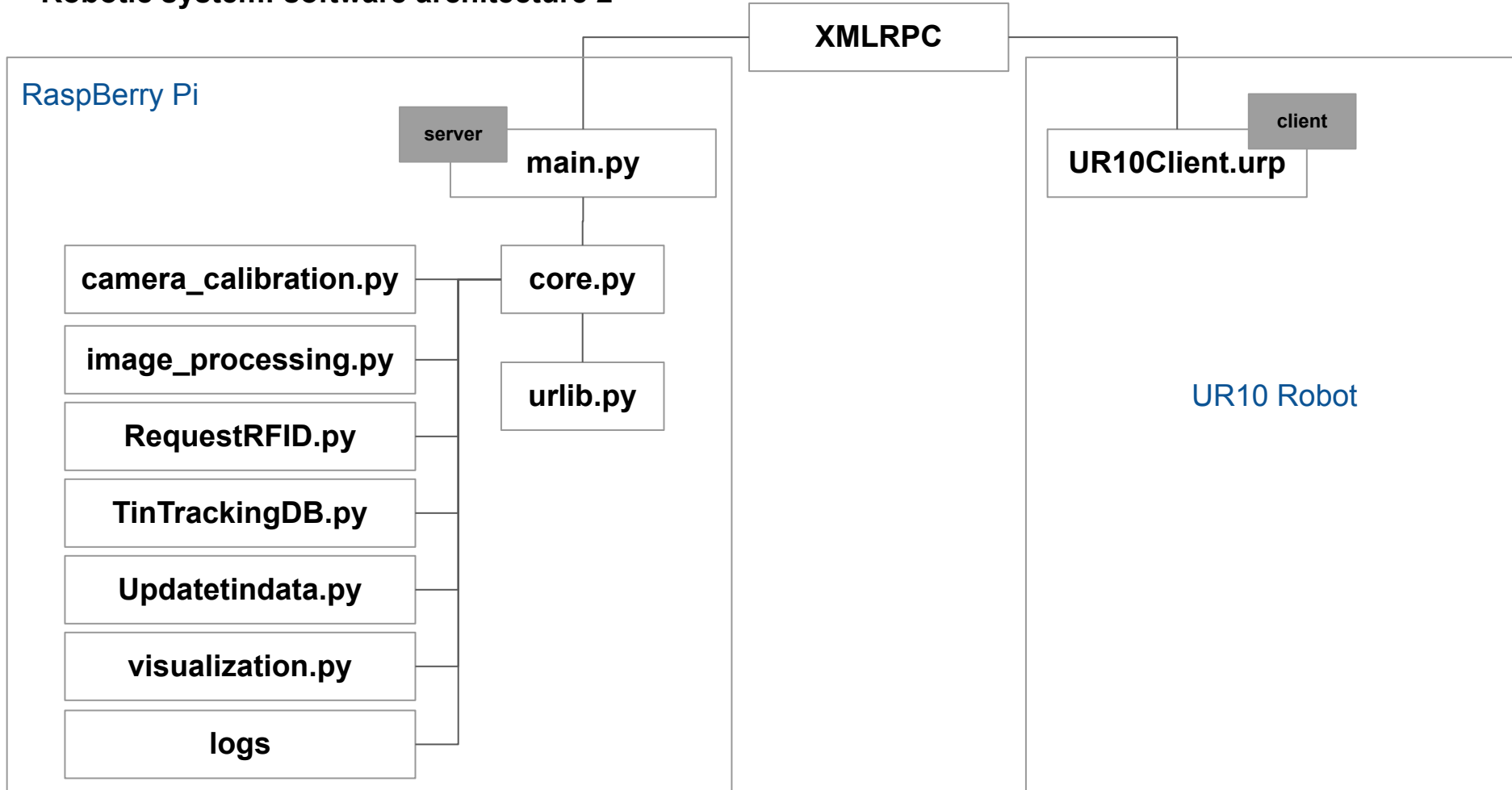
UR10: Program logic



Robotic system: software architecture 1



Robotic system: software architecture 2



Raspberry Pi: software architecture with abstraction layers

main.py

XMLRPC server
Expose endpoint

core.py

Image capturing
Image processing
Endpoints

camera_calibration.py

Camera calibration
Image undistortion

ResquestRFID.py

Function1
Function2

TinTrackingDB.py

Function1
Function2

Updatetindata.py

Function1
Function2

image_processing.py

Orientation
Contour

visualization.py

Draw axis
Draw contours

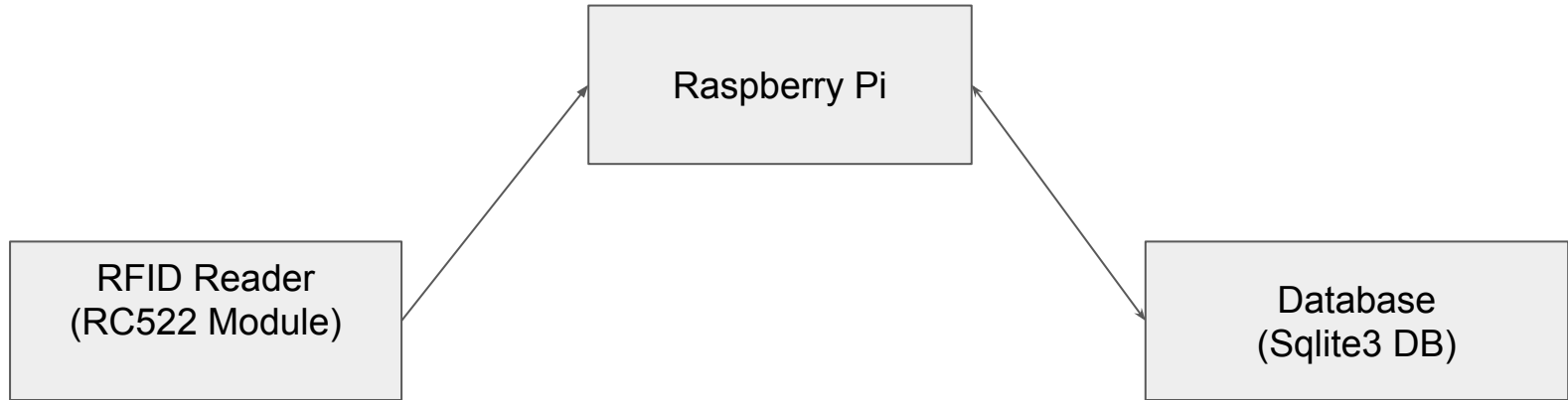
urllib.py

pose manipulation

logs

Calibration_logs
Activity logs
Cam stabilization data

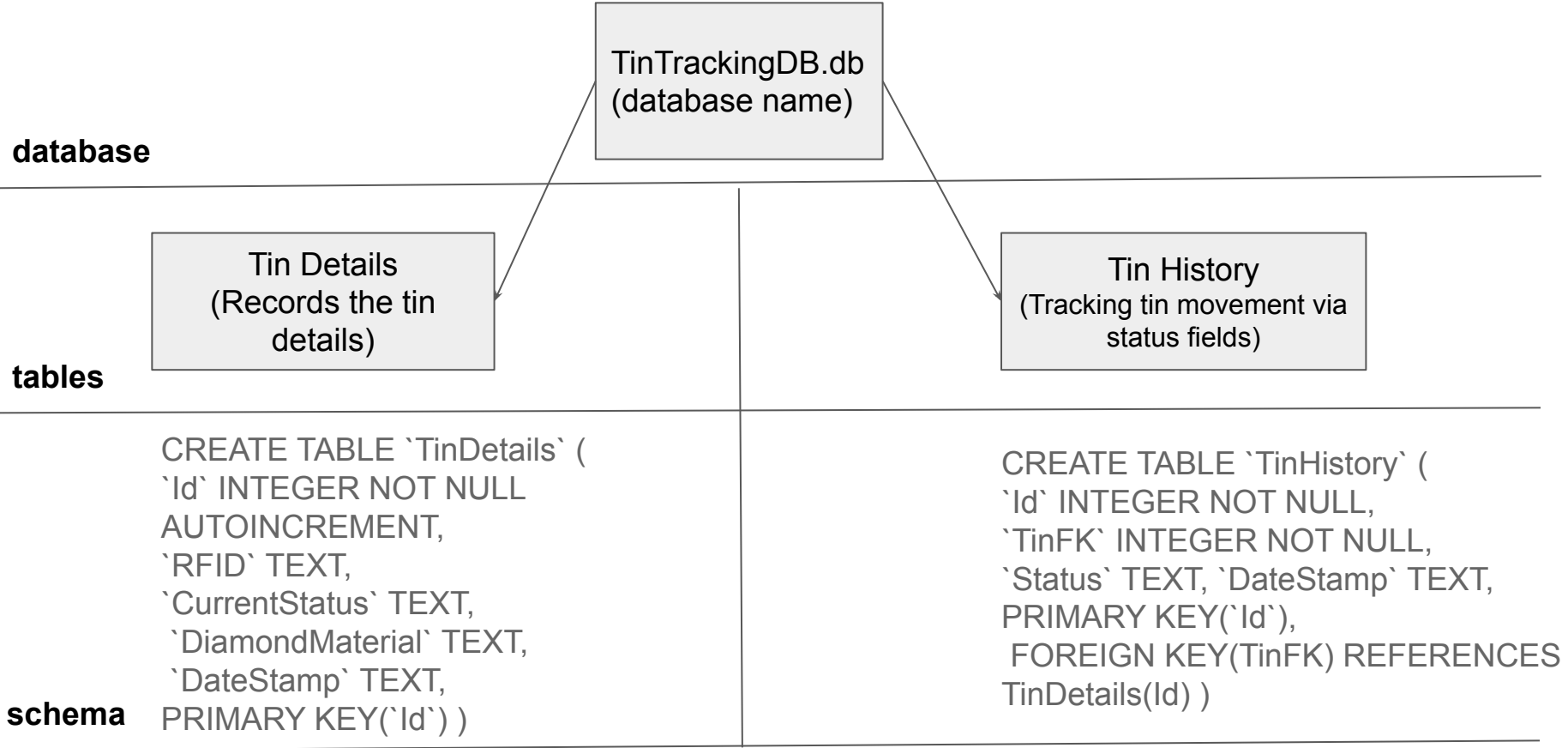
Tin Tracking Architecture



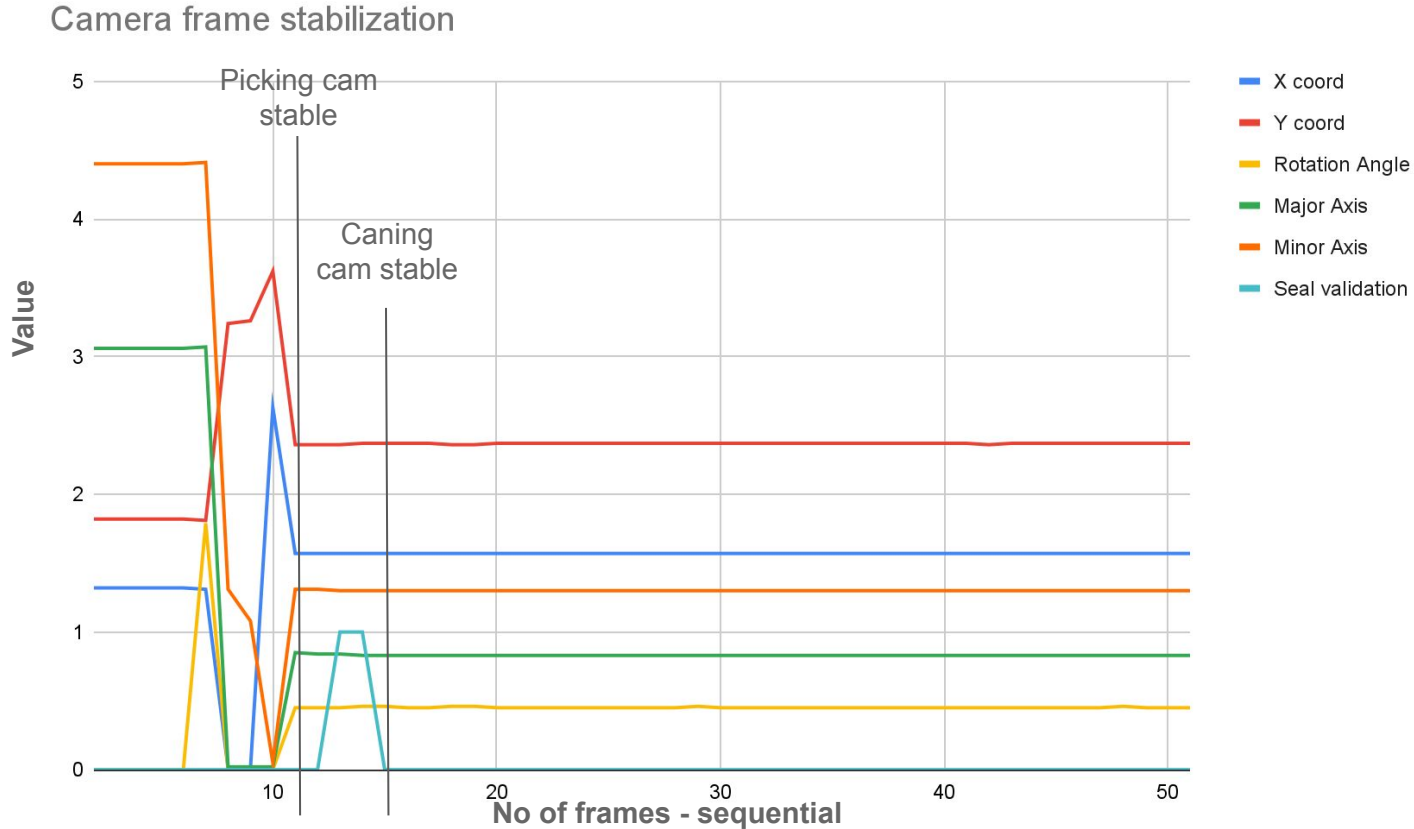
RC522 Connection

Pin	Wire Colour	RC522 Connection
1	Pink	Power
6	Pink with Tape	Ground
19	Purple with Tape	MOSI
21	Purple	MISO
22	Grey	RST
23	Orange	SCK
24	Brown	SDA
-	-	IRQ

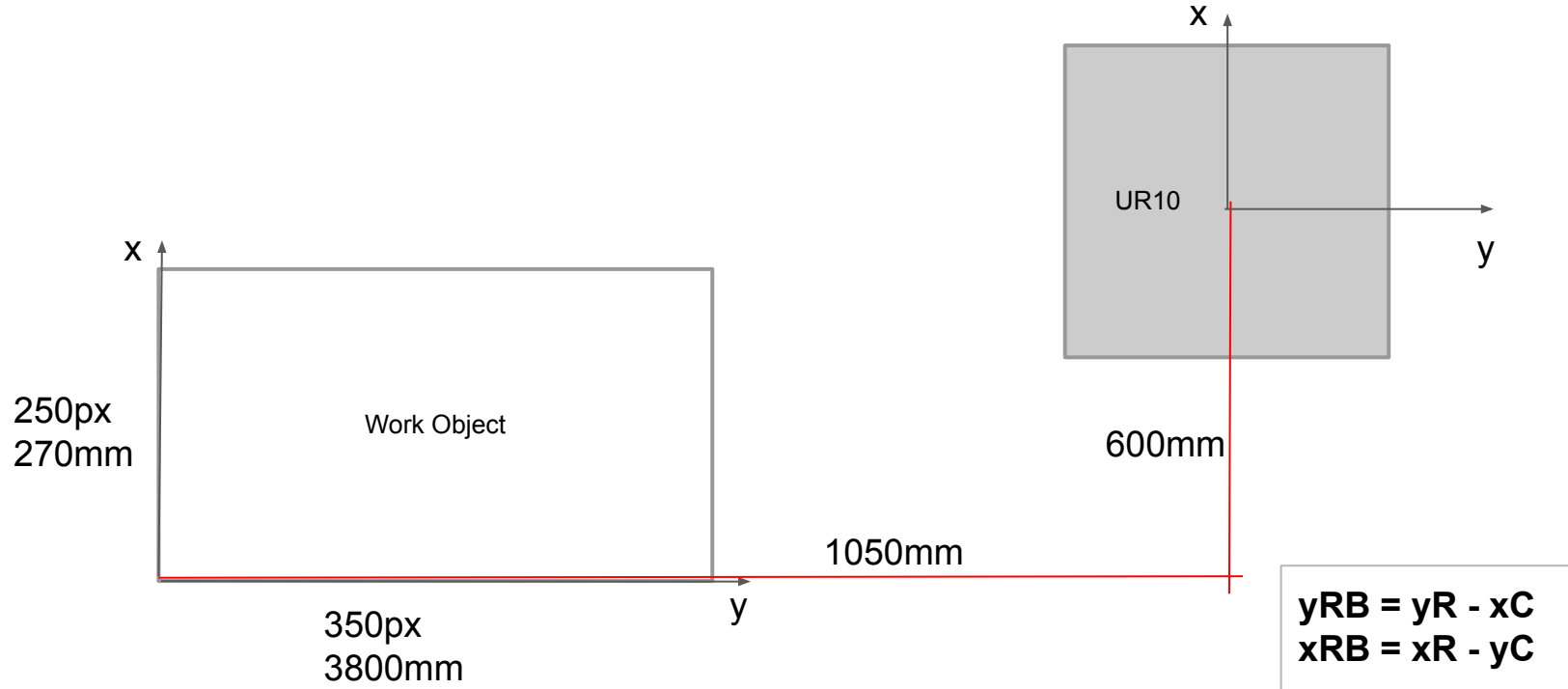
Database structure



Camera (picking and caning): Frame stabilization timeline from 0 to 50 frames



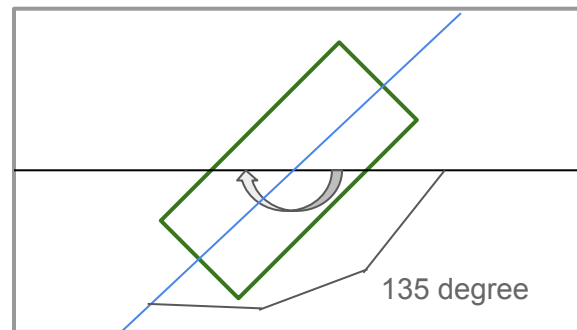
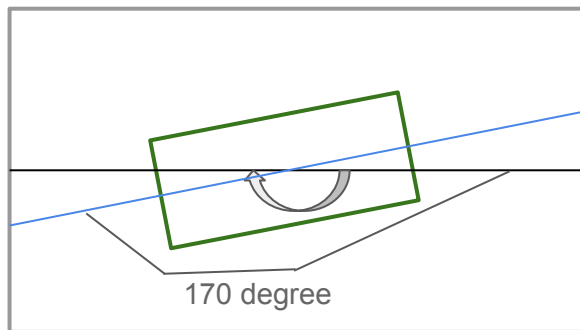
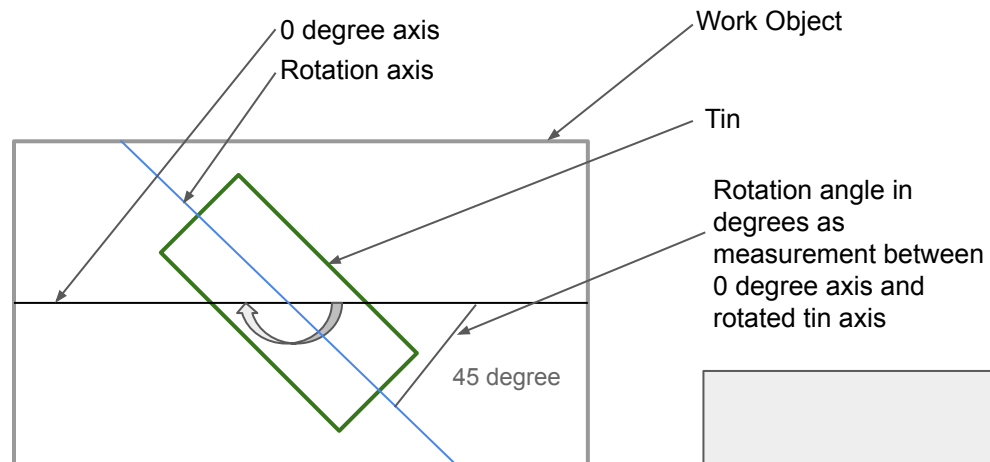
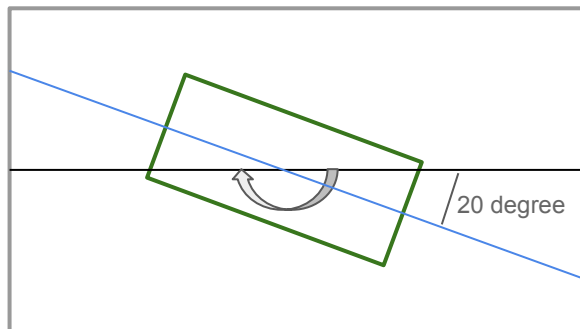
Picking camera: work object information in relation to UR10 base (integration)



- $z = 0$, and does not require transformation

R - Robot
C - Camera

Picking camera: tin rotation 0 to 180 degrees in relation to UR10 base (integration)



UR10