RAS Internal communication interface standards

Bart Boogmans

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Date	Name	Description
2022-08-29	Bart Boogmans	Creation, initial layout, add namepace definitions
2022-09-6	Bart Boogmans	Add first coordinate systems & messageformats

Table 1: Revision history of this document

Note: This is an early file version. Interfaces described in this document are prone to change.

1 Namespaces

The following identifiers are used for our vessels:

Model	Description	Identifier
TitoNeri	Light-blue Tito Neri	RAS_TN_LB
TitoNeri	Dark-blue Tito Neri	RAS_TN_DB
TitoNeri	Red Tito Neri	RAS_TN_RE
TitoNeri	Yellow Tito Neri	RAS_TN_YE
TitoNeri	Purple Tito Neri	RAS_TN_PU
TitoNeri	Green Tito Neri	RAS_TN_GR
TitoNeri	Orange Tito Neri	RAS_TN_OR
GreySeabax	The Grey-seabax	RAS_GS
Delfia-1*	Delfia 1	RAS_DF_1
Delfia-1*	Delfia 2	RAS_DF_2
Delfia-1*	Delfia 3	RAS_DF_3
Delfia-1*	Delfia 4	RAS_DF_4
Delfia-1*	Delfia 5	RAS_DF_5

2 ROS topics & message formats

Topicname	Description	Messagetype	Default unit(s)
/<vesselID>/u_ref	Actuator reference	Float32MultiArray*	shaft velocities: Rpm Azimuth angles: radians pwm signal: normalized[-1:1]
/<vesselID>/u_est	Measured actuator state	Float32MultiArray	identical to /<vesselID>/u_ref
OptiRAS/<vesselID>	Estimated pose	stdmsgs/pose	meters,quaternions
/<vesselID>/x_est	Estimated surface state	type	unit
name	desc	type	unit
name	desc	type	unit

* for the delfia this refers to $[rps\_back, rps\_front, angle\_back, angle\_front]$
for the TitoNeri this refers to $u = [rpm\_PS\_thr, rpm\_SB\_thr, pwm\_bow, alpha\_PS\_azi, alpha\_SB\_azi]$

- standard variations: (e.g. pose as 3 or 6 DOF.) and how to distinct them, and when we generally use which one.

3 IP reservation

explain local network and vpn server protocols. explain how to connect to both.

4 Coordinate systems

4.1 Tiny lab tank

The coordinate system of the optitrack system on the tiny lab tank is defined as follows:

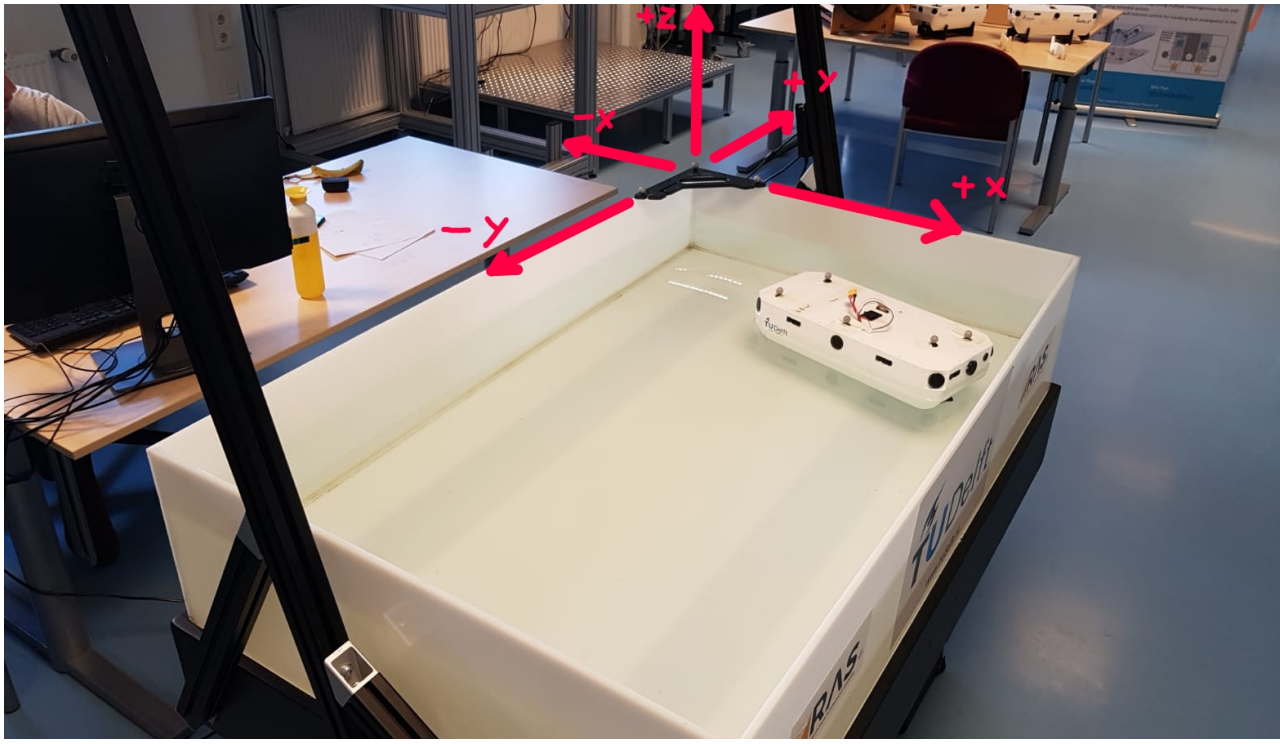

Figure 1: The tiny tank is about 1.3 by 0.81m

Note that Z does not point down (as in line with the standard NED definition). Coordinate system transformation can be done afterwards, but this is how you can expect the initial pose-stream on ROS.

4.2 Small towing tank

TBD