# Robot Control Interface - Feature #1715
# Provide better interface for creation of wrench

01/06/2014 11:56 AM - C. Emmerich

| | | | |
|---|---|---|---|
| **Status:** | Resolved | **Start date:** | 01/06/2014 |
| **Priority:** | High | **Due date:** | |
| **Assignee:** | | **% Done:** | 100% |
| **Category:** | Software | **Estimated time:** | 0.00 hour |
| **Target version:** | rci0.5 | | |

**Description**

In order to make it easier to create a rci::Wrench, please provide a better interface like you did e.g. for rci::Poses.

**Related issues:**

| | | |
|---|---|---|
| Related to Robot Control Interface - Feature # 1714: Provide rci::wrench conv... | **Resolved** | **01/06/2014** |
| Related to Robot Control Interface - Bug # 1043: Modelisation of Wrench seems... | **Feedback** | **06/28/2012** |

## Associated revisions

**Revision 719 - 01/16/2014 07:02 PM - C. Emmerich**

refs #1043, refs #1715 implemented better rci::Wrench interface

**Revision 440 - 01/17/2014 01:22 AM - C. Emmerich**

adapted to new rci::wrench interface (refs #1715)

## History

**#1 - 01/06/2014 01:49 PM - Anonymous**

*- Assignee changed from Anonymous to C. Emmerich*

**#2 - 01/06/2014 01:49 PM - Anonymous**

*- Category set to Software*

*- Target version set to rci0.5*

**#3 - 01/06/2014 08:06 PM - C. Emmerich**

*- Assignee changed from C. Emmerich to Anonymous*

Sorry, Arne. But I will not write a converter for this type unless the type and the interface is conceptually clear to me. On the one hand there is rci:Wrench which stores cartesian torques somehow as quaternions (and I dont even know whether it is possible to do so; at least unit quaternions dont make sense here in my opinion), on the other hand there is rst.wrench storing cartesian torques as 3-dim vector, which is kind of interpretable and goes inline with ROS etc and the LWR (whatever representation that is by the way). I dont know the connection between these two!
So, you have 3 options:

1. Give me an extended and complete course of how you came to the quaternions representation and how to convert this into a 3-dim-vector representation. Then I will do the coding.
2. Change the representation of rci::Wrench into a 3-dim vector and let's discuss what exact representation/meaning that could be/have ... and I will do the coding.
3. Write the converter by yourself.

So, which door is yours? Number 1, 2 or 3?
:D

#### #4 - 01/06/2014 08:14 PM - C. Emmerich

Oh sorry, I think I got messed up with the issue topic, but these issues (#1043, #1714 #1715) are so strongly related that you can put my answer udner any of these :D

#### #5 - 01/07/2014 11:04 AM - Anonymous

It seems to indeed be unconventional to use quaternions for torques, yet possible (AFAIR), see this (especially first answer and its links). So it seems that the most natural way to represent cartesian torques is indeed a 3D vector with torques about x, y, z.

As you mentioned, this would be in line with ROS, Orocos and rst.

This would be door 2, Sir.

However, all of the above formats don't seem over-specified to me. But even after some searching, I did not find a real *best-practice* for representing torques. I think the best way is to have a look at the torque representations in the well-established physics engines (bullet, etc.).

#### #6 - 01/07/2014 04:19 PM - Anonymous

We should consider the publication Geometric Relations between Rigid Bodies: Semantics for Standardization, which is a recent publication on this topic, including force and torque representations (see Appendix, Section VII-D, Table V).

#### #7 - 01/07/2014 04:37 PM - C. Emmerich

Do you know where I can find the appendix? It is not included in this pdf (and also not in part2 - another part of this tutorial)...

#### #8 - 01/07/2014 04:54 PM - Anonymous

Sorry, wrong link. Here it is with appendix (can't uplaod because of IEEE copyright stuff).

#### #9 - 01/16/2014 10:29 PM - J. Moringen

In r719, is the second parameter of the Wrench constructor by-value (as opposed to by-reference) on purpose?

```
Wrench(const Forces& f, const Torques t);
```

#### #10 - 01/17/2014 01:13 AM - C. Emmerich

No, this was not on purpose. Changed in r720. Thx for the hint.

#### #11 - 01/20/2014 09:03 AM - C. Emmerich

*- Status changed from New to Resolved*

*- % Done changed from 0 to 100*

I consider this issue as closed. For final review of (new) rci::Wrench interface/modelization, see #1043.