# Moving the Robot

The Pioneer 3-DX robot is an all-purpose base, used for research and applications involving mapping, teleoperation, localization, monitoring and other behaviors.

It is a so-called ***differential-drive*** mobile platform (https://en.wikipedia.org/wiki/Differential_wheeled_robot), with a powered wheel on either side of the robot body, and a rear castor wheel for balance.

Each wheel is powered by its own motor. The motion of the robot is determined by the speed on the wheels:

- If both wheels are driven at the same direction and speed, the robot will move in a straight line.
- If one speed is higher than the other one, the robot will turn towards the direction of the lower speed.
- If both wheels are turned with equal speed in opposite directions, the robot will spin around the central point of its axis.

(http://www.guiott.com/CleaningRobot/C-Motion/Motion.htm)
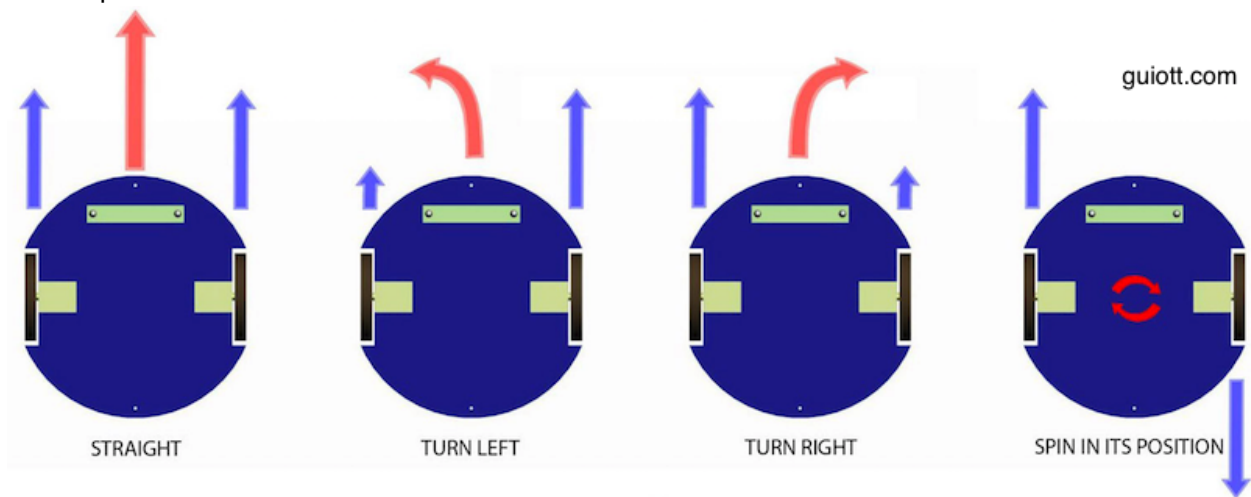
Let's see a Pioneer robot moving!

In [1]:

```
# this is code cell -> click on it, then press Shift+Enter
from IPython.display import YouTubeVideo
YouTubeVideo('vasBnRS3tQk')
```

Out[1]:

Pioneer 3-DX Mobile Robot

Initialization

Throughout the course, some code is already written for you, and organized in modules called *packages*. The cell below is an initialization step that must be called at the beginning of each notebook. It can take a few seconds to run, so please be patient and wait until the running indicator In[*] becomes In[2].

In [2]:

```
# this is another code cell -> click on it, then press Shift+Enter
import packages.initialization
import pioneer3dx as p3dx
p3dx.init()
```

Motion

Let's move the robot on the simulator!

You are going to use a *widget*, a Graphical User Interface (GUI) with two sliders for moving the robot in two ways: translation and rotation.

In [ ]:

```
# and this is again a code cell -> you already know what to do, don't you?
import motion_widget
```

The cell above outputs two sliders, which control the translation and rotation of the robot. Initially both values are zero; move the slider left or right to change their values and move the robot.

Once you are familiar with the motion of the robot, please proceed to the next notebook: Motion Functions (Motion%20Functions.ipynb).

Try-a-Bot: an open source guide for robot programming

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