Introduction to Pioneer 3-DX, ARIA and MobileSim

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What is Pioneer

- Pioneer is a family of mobile robots, including two-wheel and four-wheel drive versions.
  - http://www.mobilerobots.com/

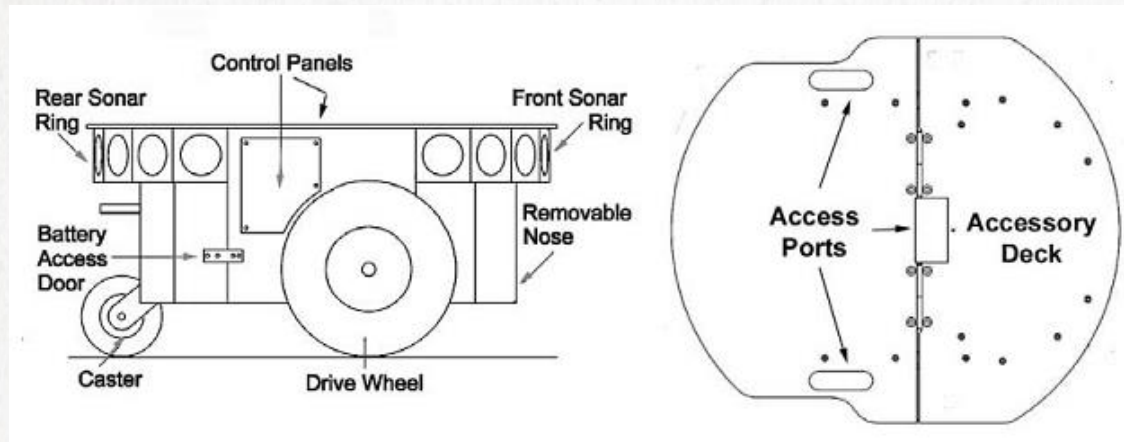Pioneer 3-AT   Pioneer 3-DX   Pioneer LX
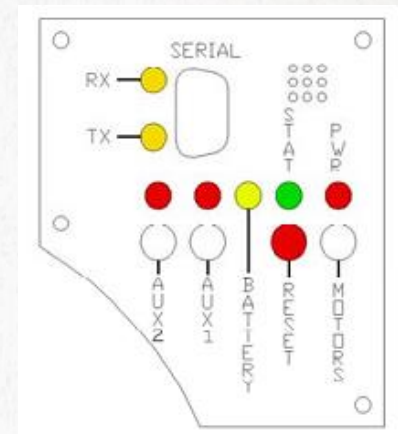
Pioneer 3-DX

- Specifications
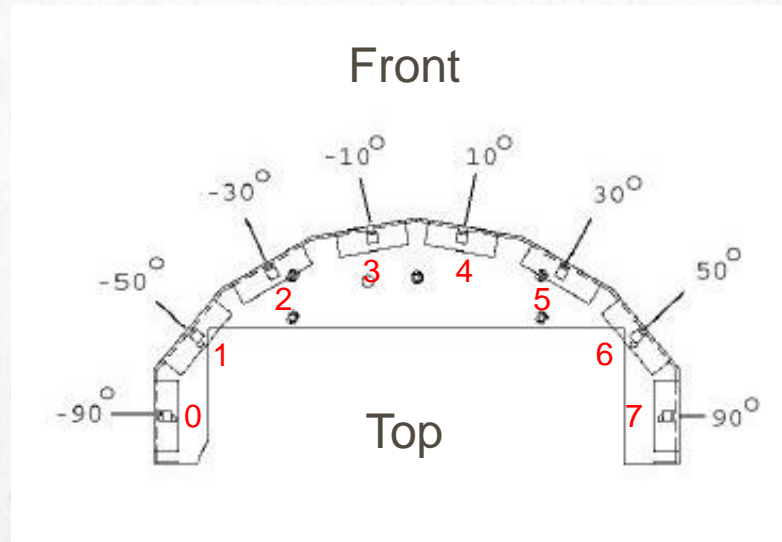

Side view

Top view

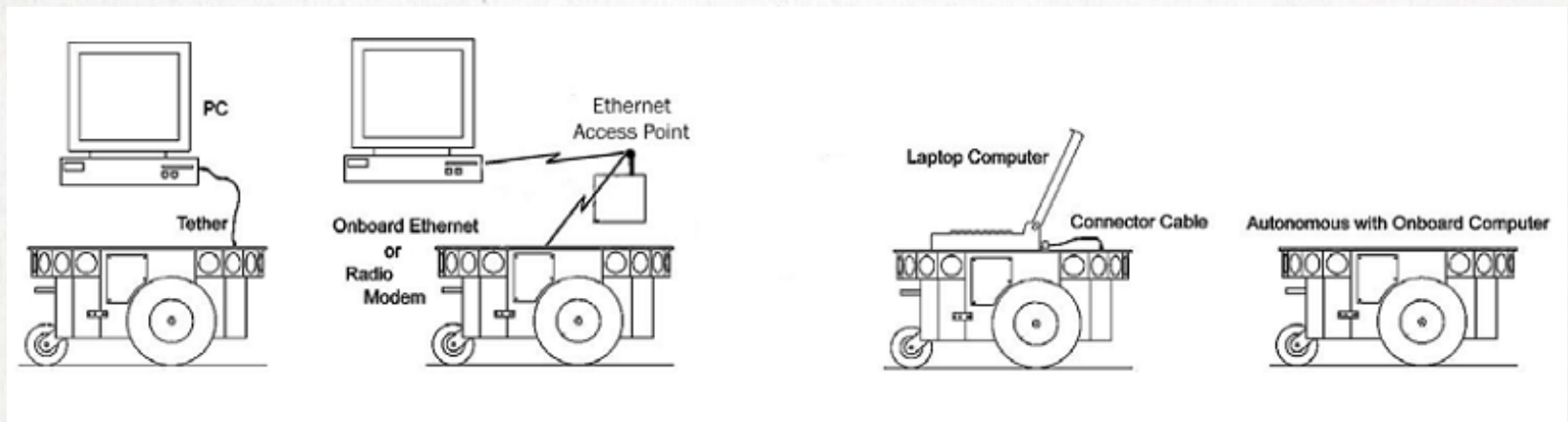

Control Panels

Pioneer 3-DX

- Sonars
  - ➤8 sonar arrays: One on each side, and six facing outward at 200 intervals
  - ➤Range from 10cm to 5m

Sonar numbers

Connection Options

- All MobileRobots platforms are served in a client-server architecture.

ARIA

- Open-source C++ library for all MobileRobots platforms and many accessory devices.

- Applications developed with ARIA can easily navigate the mobile platform, as well as manage odometry, sensor readings, and other operating data.

- Download link:

http://robots.mobilerobots.com/wiki/ARIA

Examples of ARIA

- Path
  - ➢ Program Files\MobileRobots\Aria\examples

- Important examples
  - ➢ demo.cpp
    - General purpose testing and demo program, using ArMode classes to provide keyboard control of various robot functions.
  - ➢ wander.cpp
    - Example using actions and sonars to implement a random wander avoiding obstacles.

MobileSim

- MobileSim provides a simulation environment for MobileRobots platforms and many accessories.

- Download link: http://robots.mobilerobots.com/wiki/MobileSim

- The following pages show how to run MobileSim on Windows and Ubuntu.
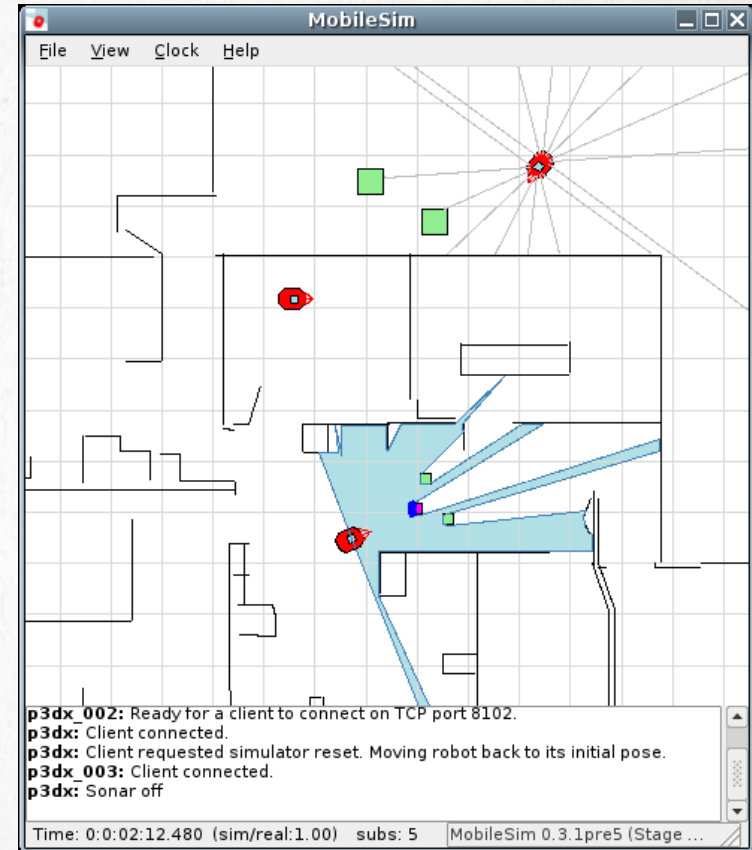
Windows

- Download ARIA and MobileSim.
    - Latest Version for Windows:
        - ARIA 2.9.0-1
        - MobileSim 0.7.5

- Install them with the executable file.
    - The default path should be located at:
        - C:\Program Files\MobileRobots\Aria
        - C:\Program Files\MobileRobots\MobileSim

Windows

Start ARIA
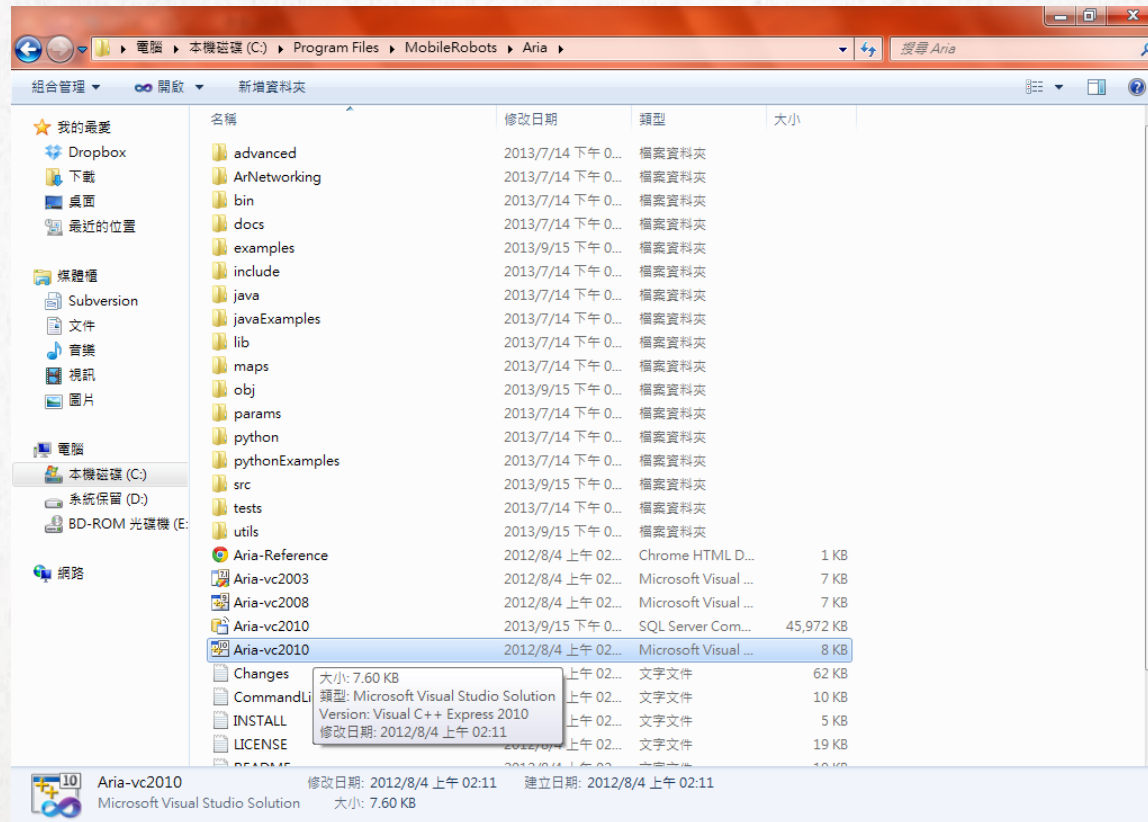
Windows
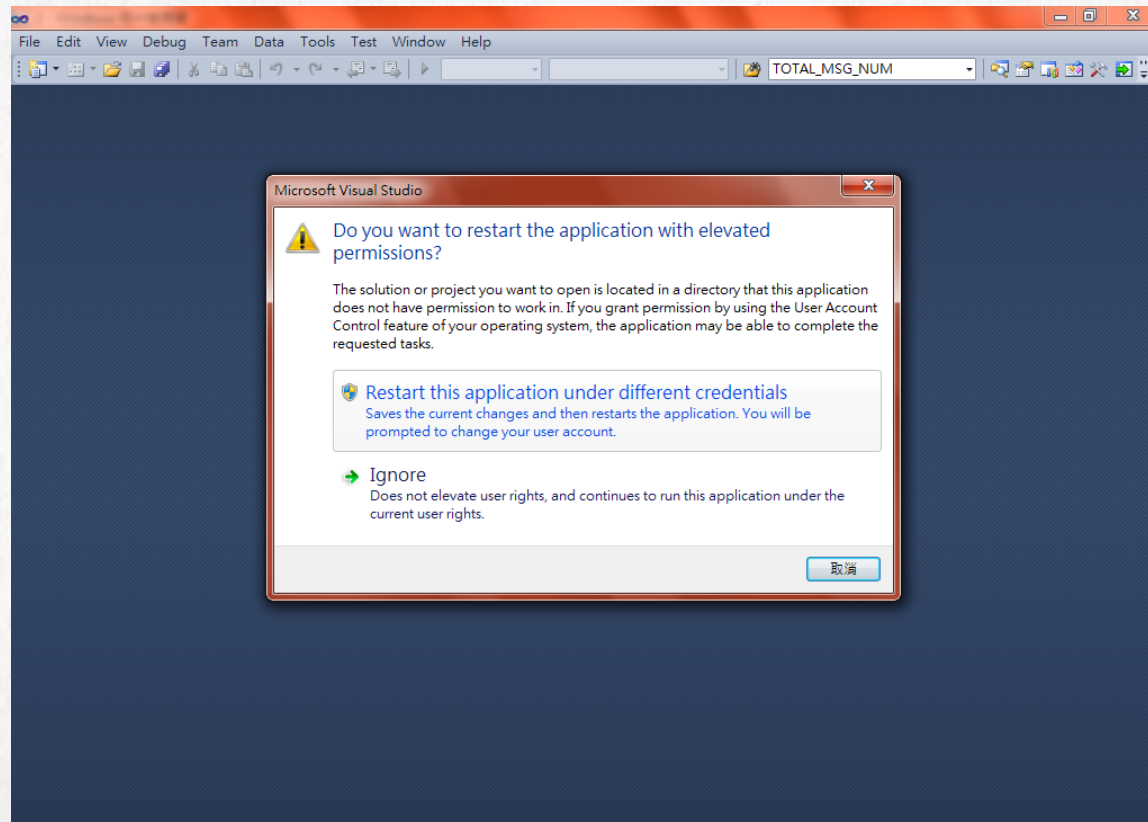
Windows

Set demo as the startup project
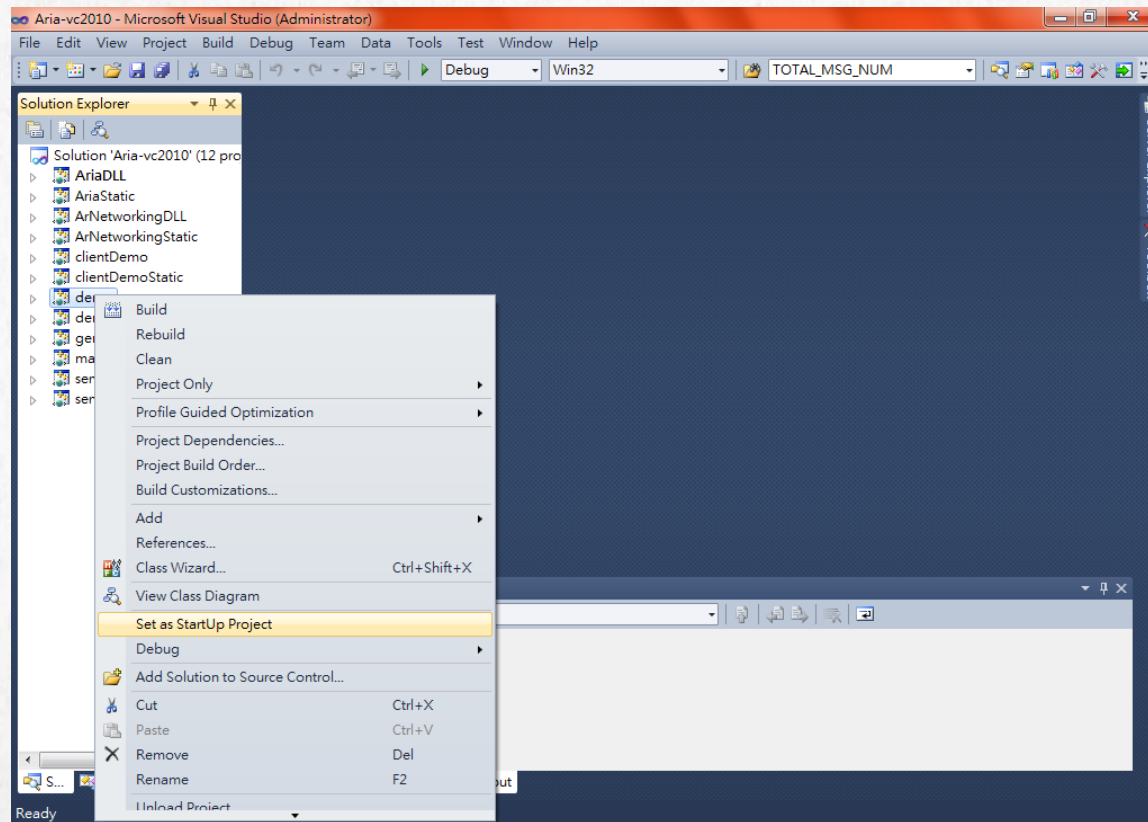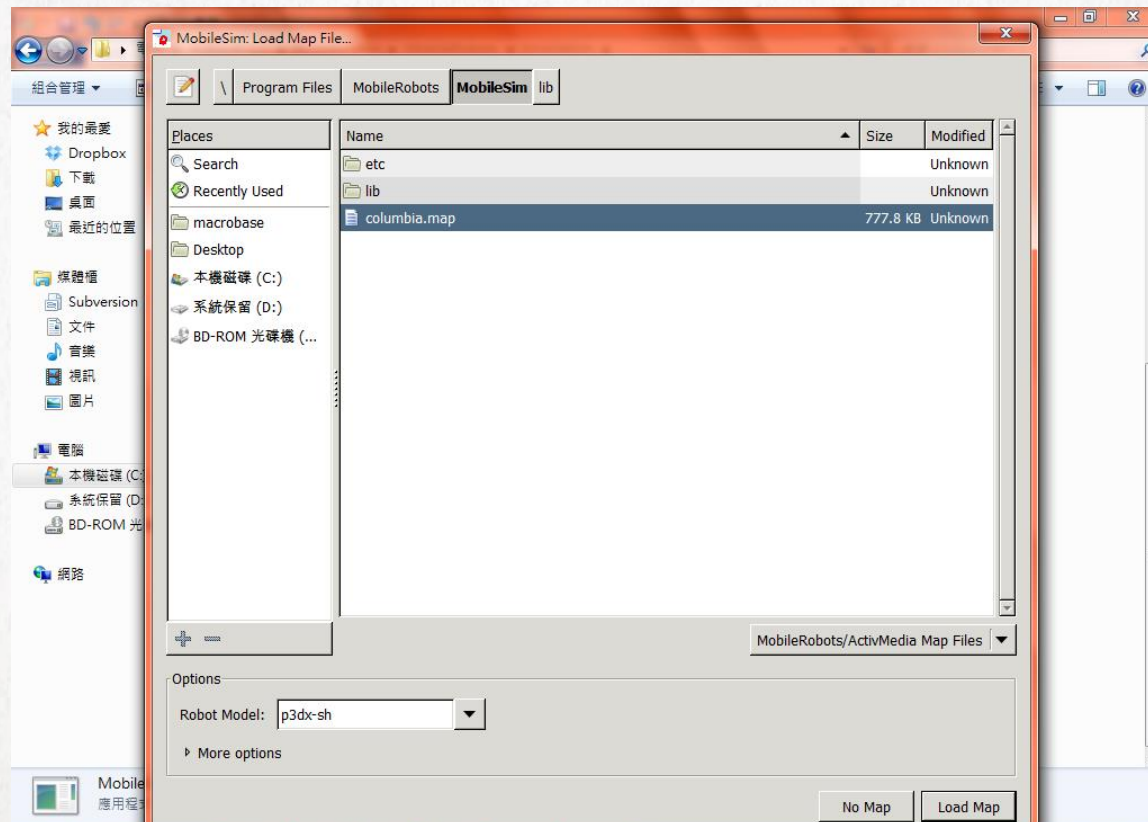
Windows
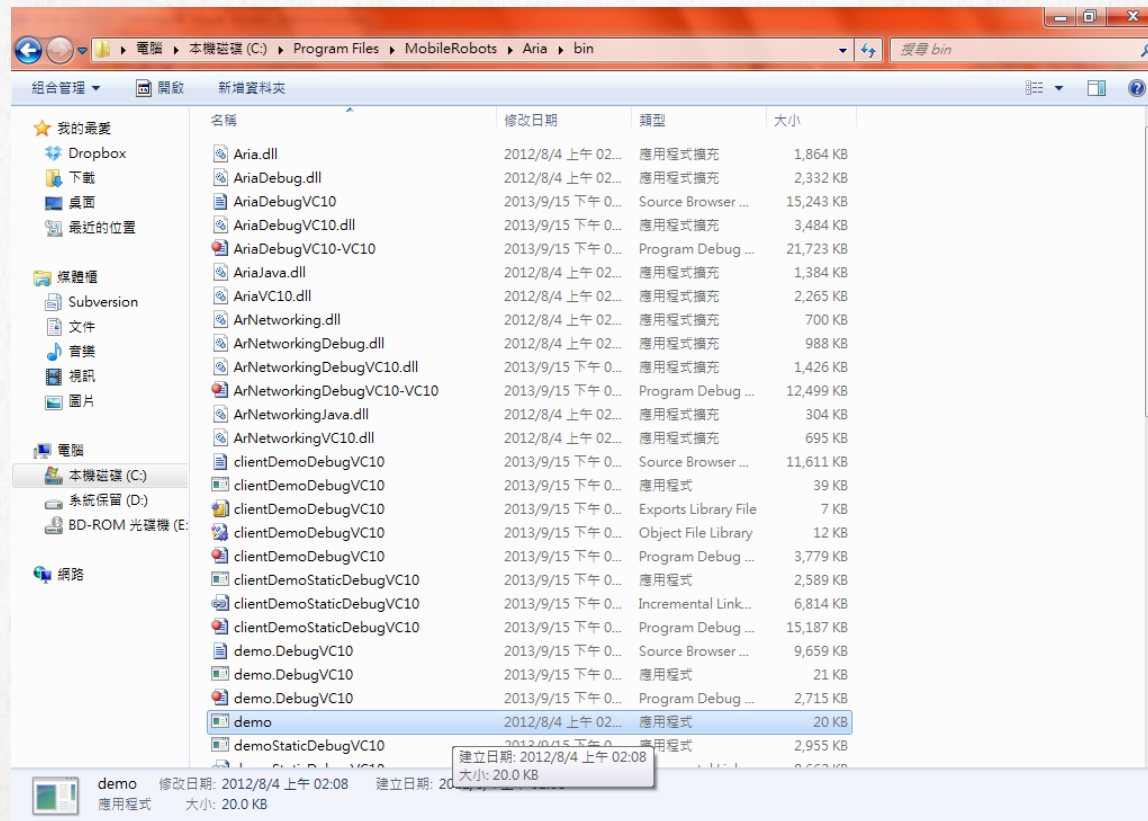
Rebuild the solution
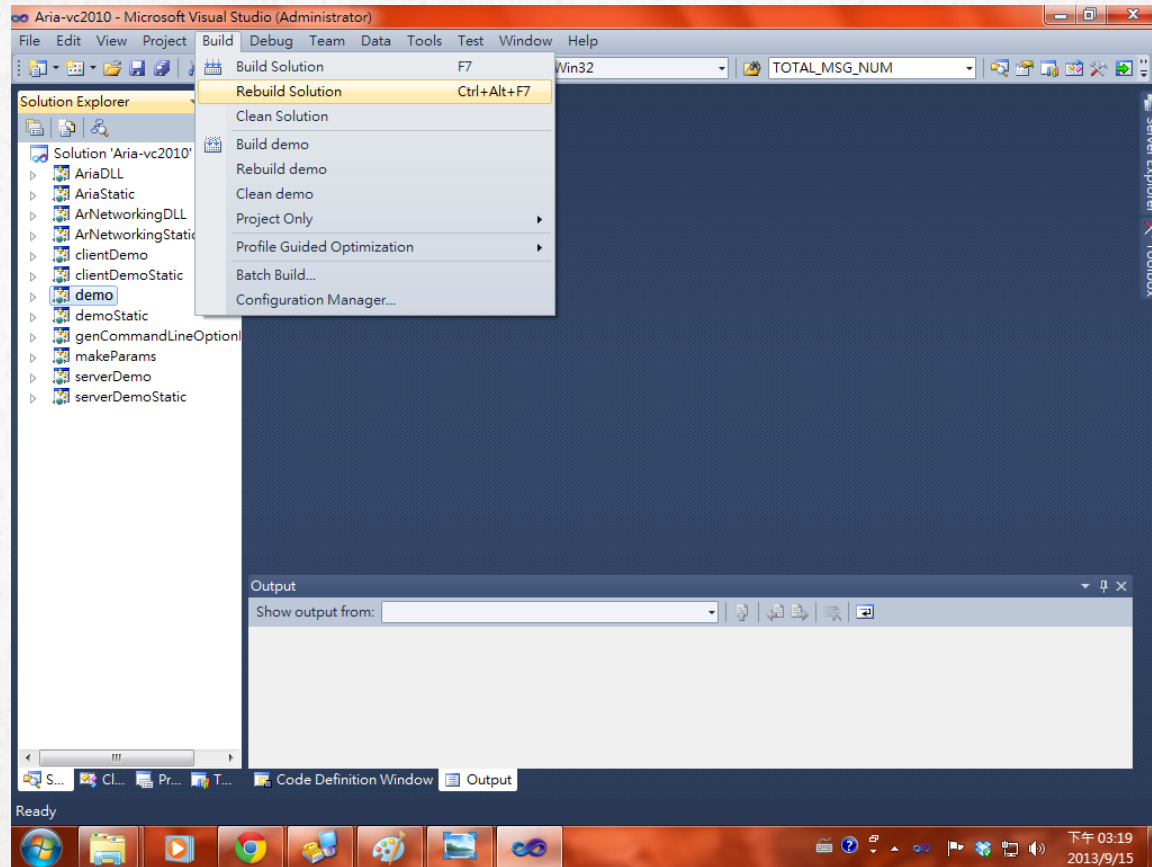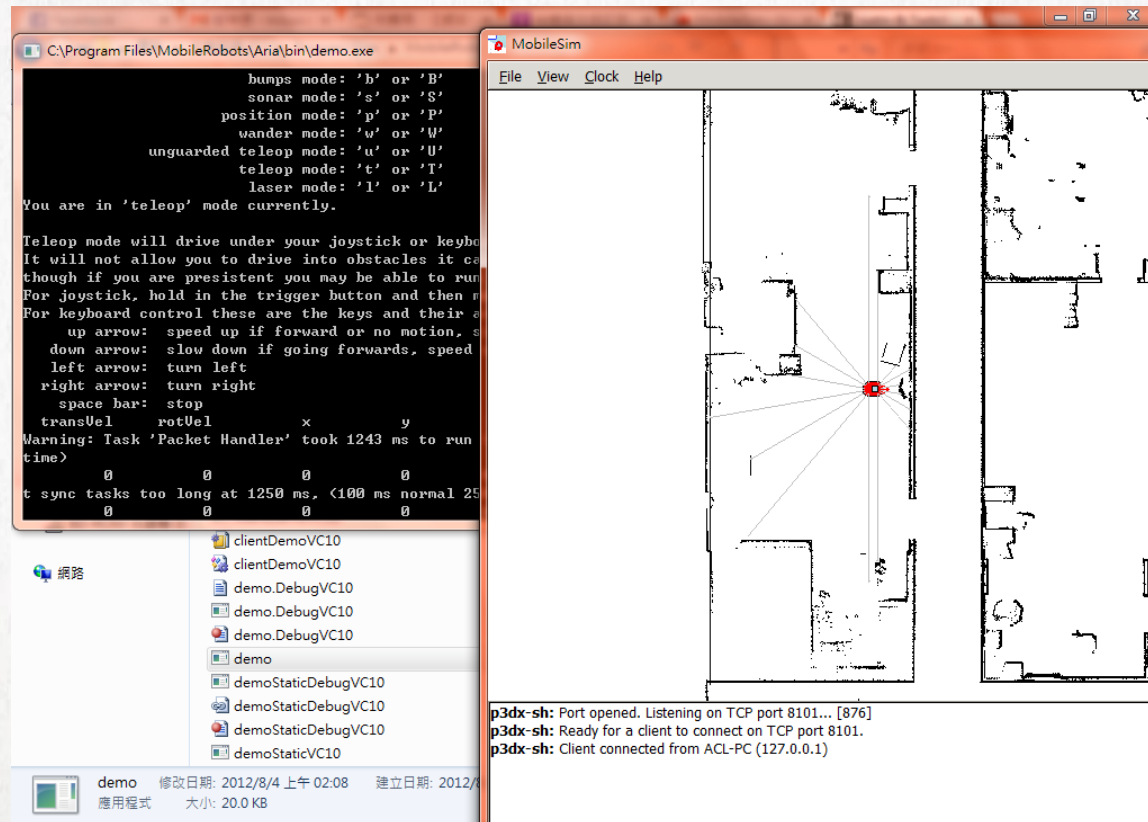
Windows
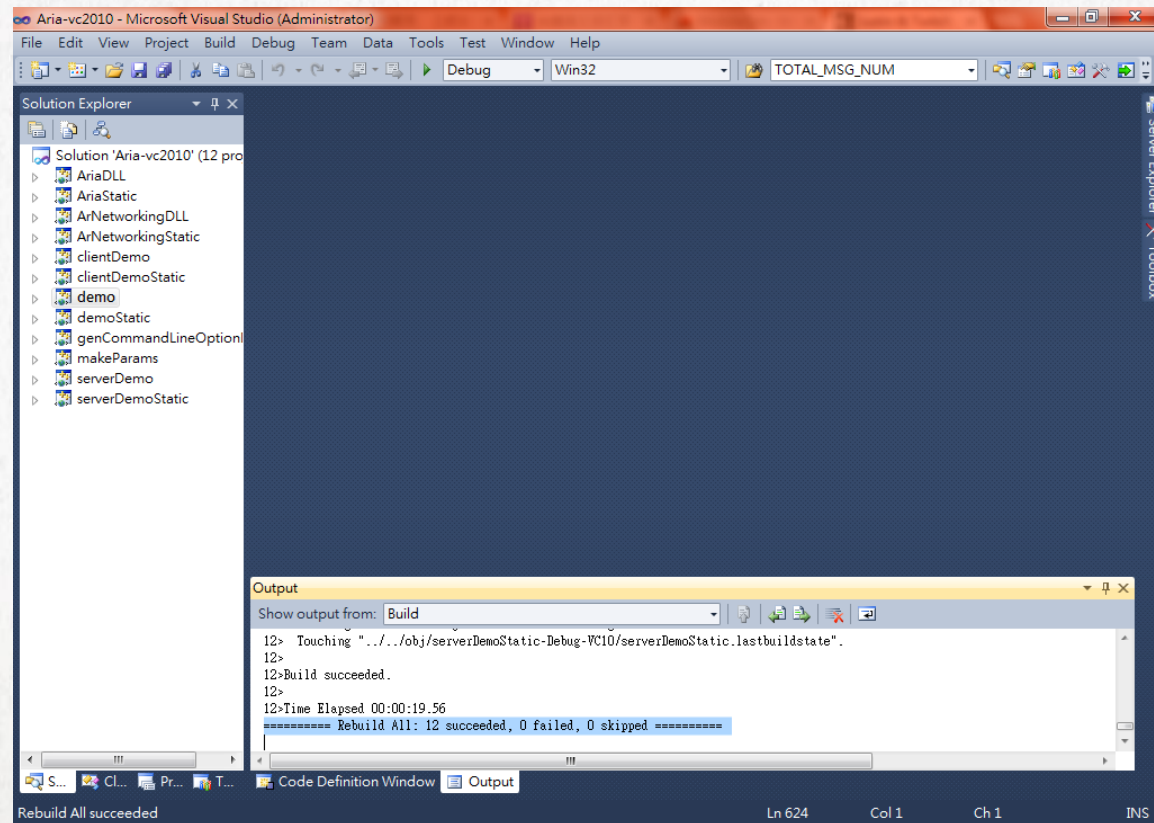
Windows

Execute MobileSim
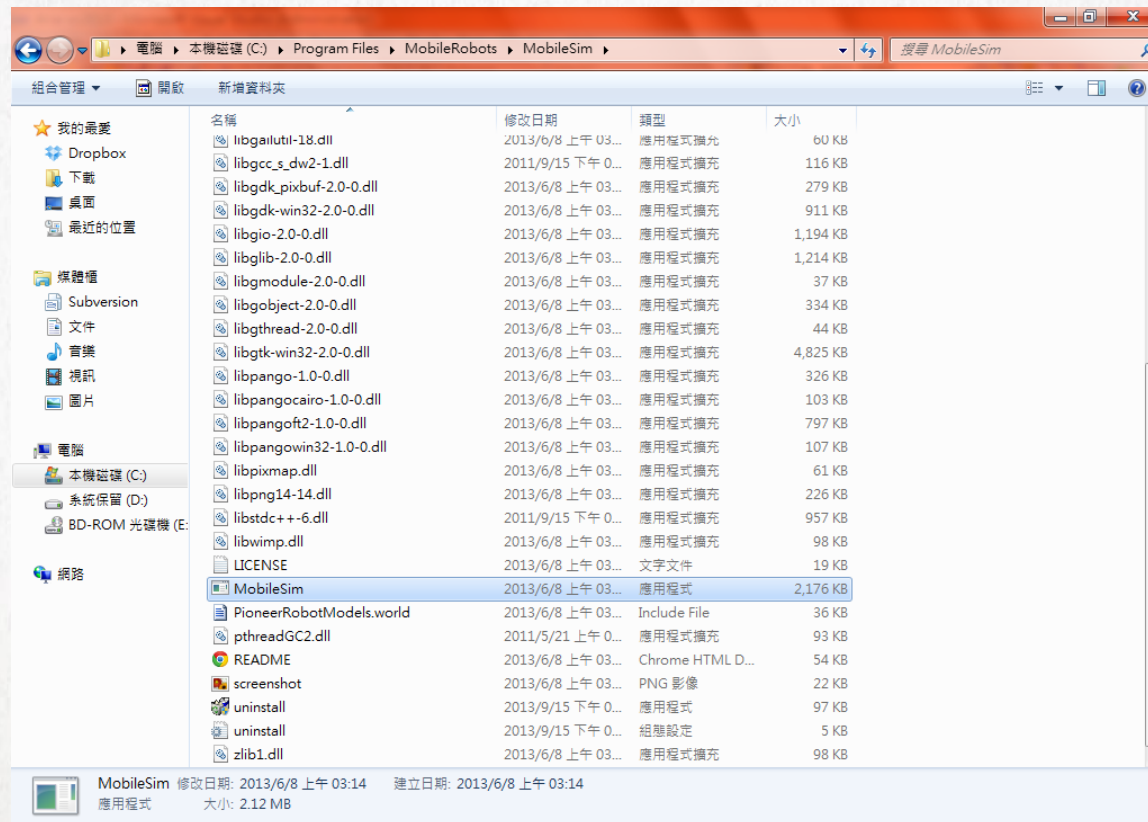
Windows

Load the map

Windows

Execute demo

Windows

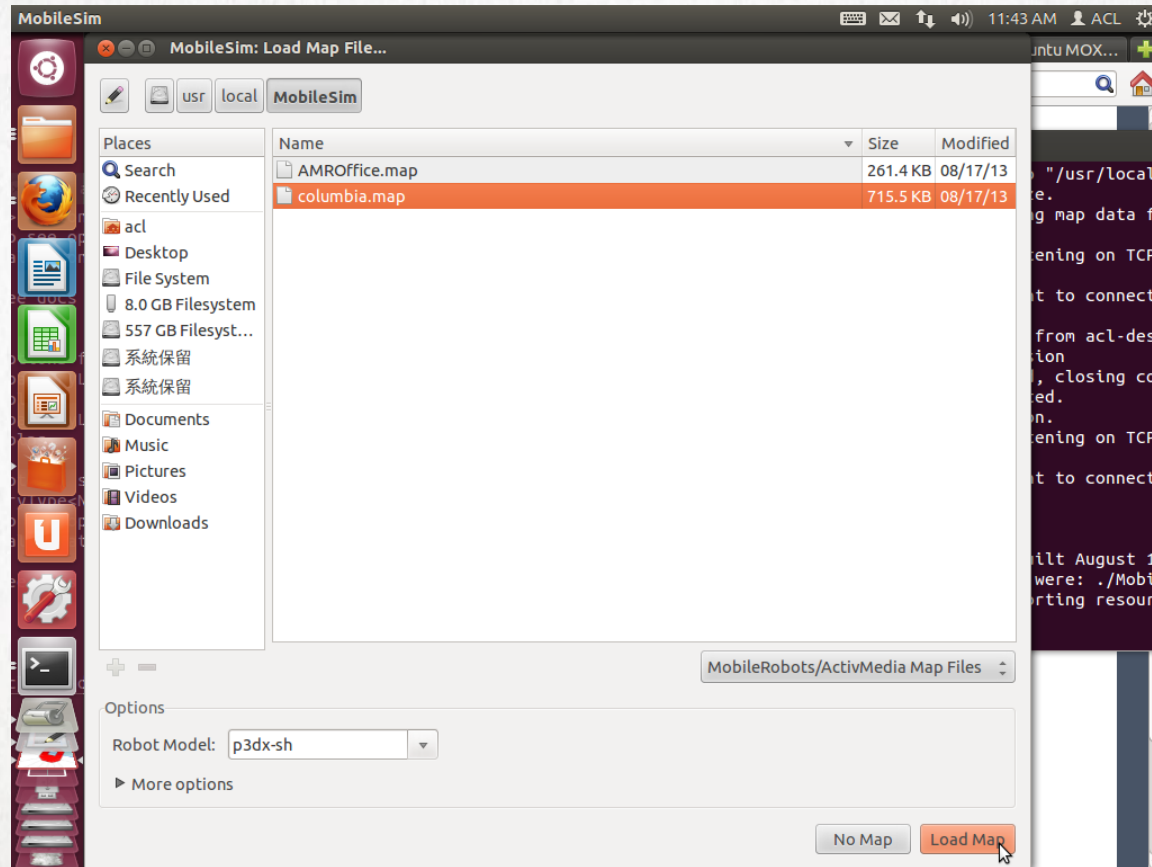Try to control the mobile robot in different modes.

Ubuntu

- Download ARIA and MobileSim.
  - Latest Version for Ubuntu 12.04
    - ARIA 2.9.0
    - MobileSim 0.7.5

- Install them with the file.
  - They should be located at:
    - /usr/local/Aria
    - /usr/local/MobileSim

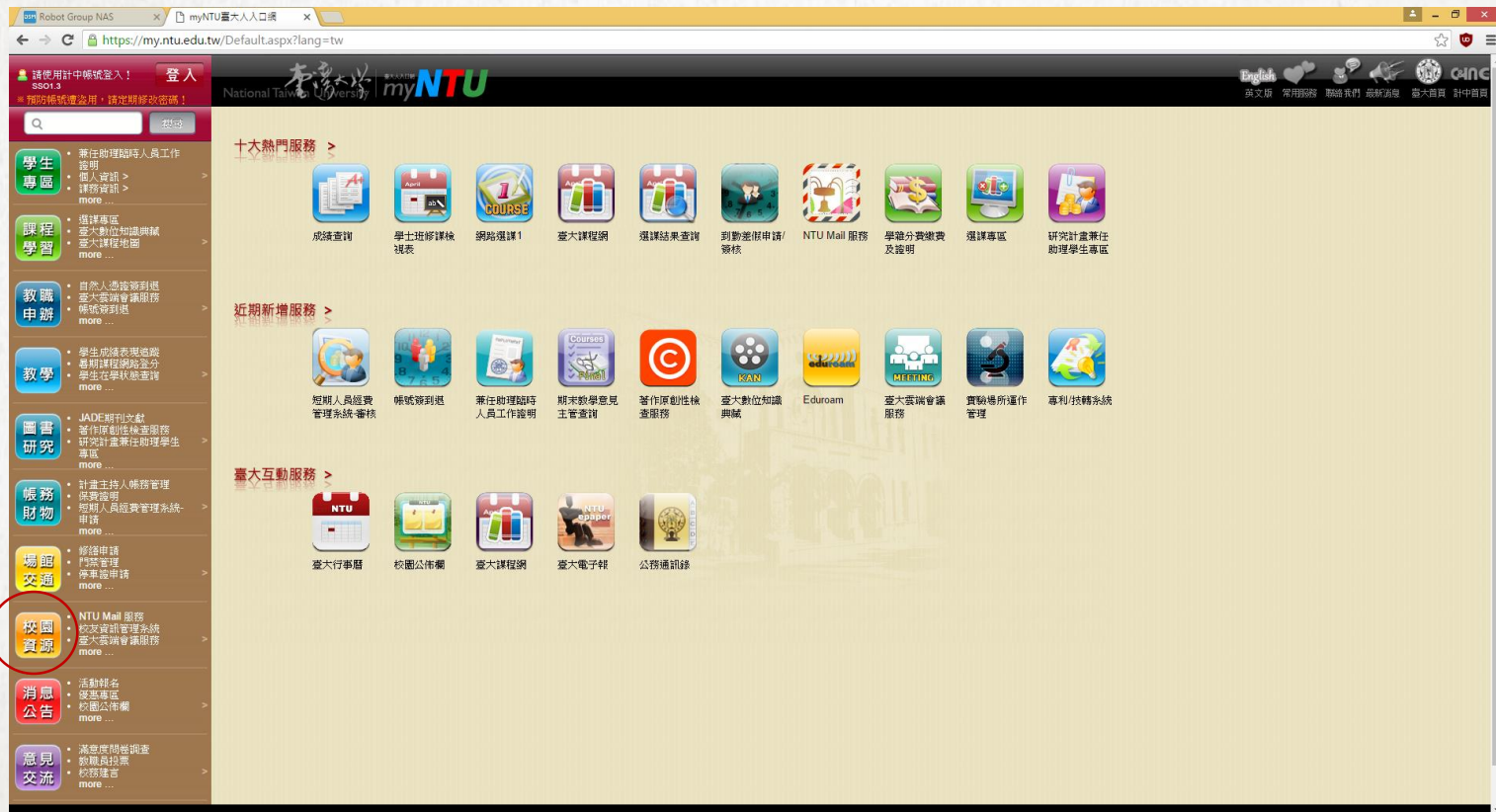- Make ARIA before use it.

Ubuntu

Ubuntu

Ubuntu

MacOS

- If you use MacOS we strongly recommend you do either a dual boot and install Windows or install a virtual machine (with Windows).

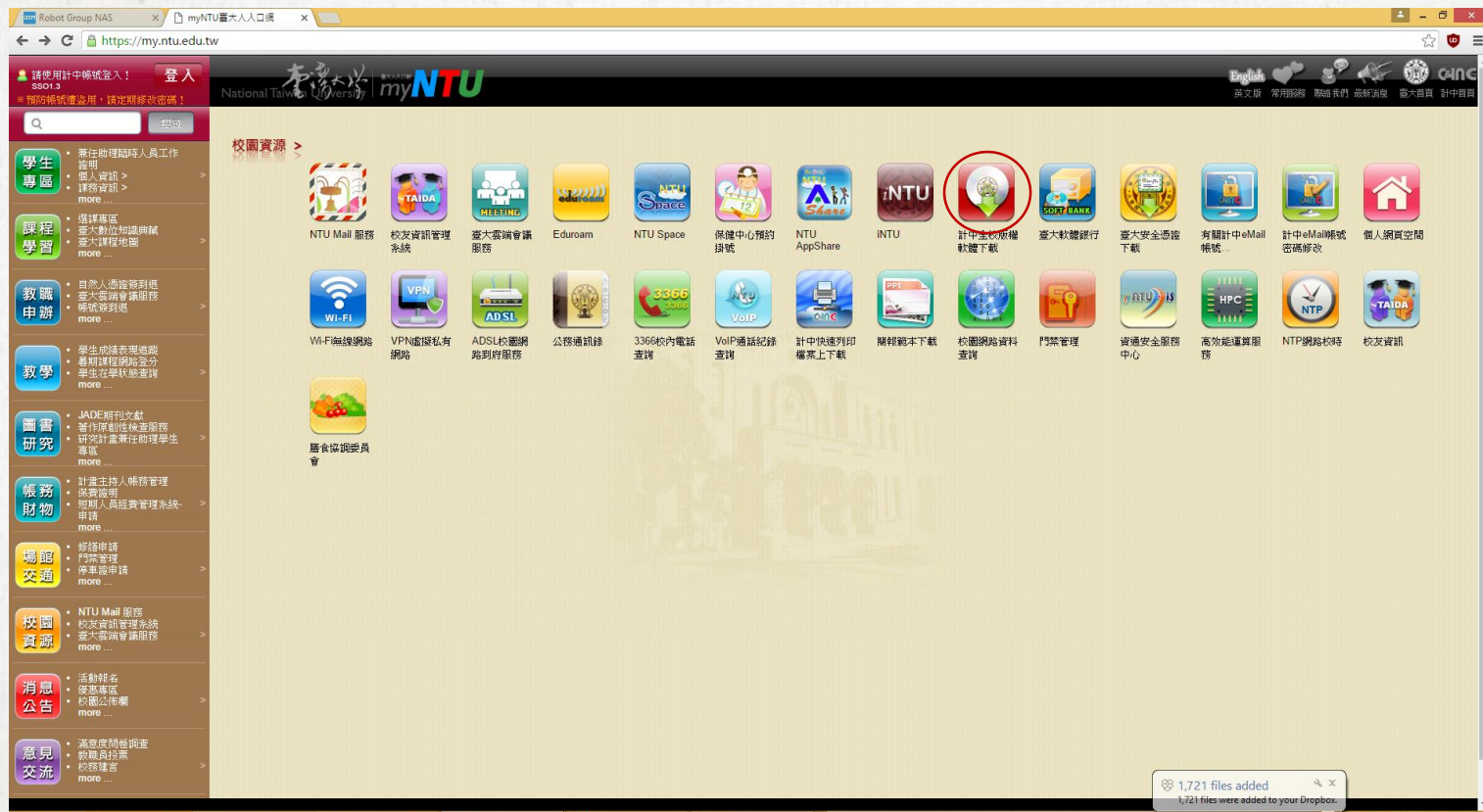# Get Windows10 free from NTU

Get Windows10 free from NTU

Get Windows10 free from NTU

Get Windows10 free from NTU

Assignment1 Announcement

- Assignment1 is now live on CEIBA.
  - Deadline: 2016/10/03 13:20
  - Make sure you followed the requirements before submission.