TRACS Complete Installation under Linux **in 10 minutes and 7 steps**
(August 2017)

**The following guidelines will properly work if the right packages and software versions are chosen.

Due to FEniCS libraries dependencies, it is recommended to use Ubuntu 14.04 LTS

1. If the system is recently fresh installed:

- ***sudo apt-get update***
- ***sudo apt-get install build-essential***
- ***sudo apt-get install cmake***
- ***sudo apt-get install git***

2. Test gcc version, must be >= than 4.8

- ***gcc -v***

3. Installing ROOT**:**

It is preferable to run pre-build binaries of ROOT on la Linux system:

- ***wget https://root.cern.ch/download/root_v6.06.06.Linux-ubuntu14-x86_64-gcc4.8.tar.gz***
- ***sudo cp root_v6.06.06.Linux-ubuntu14-x86_64-gcc4.8.tar.gz /usr/local***
- ***cd /usr/local***
- ***sudo tar -xvzf root_v6.06.06.Linux-ubuntu14-x86_64-gcc4.8.tar.gz***

Modify .bashrc for ROOT:

- Add the following 3 environment variables to your .bashrc file; This file should be in your home directory.

```
export ROOTSYS=/usr/local/root
export PATH=$ROOTSYS/bin:$PATH
export LD_LIBRARY_PATH=$ROOTSYS/lib:$LD_LIBRARY_PATH
```

- Refresh source: ***source .bashrc***

4. Installing FeniCS

Getting the right repos for older FEniCS version:

- ***sudo add-apt-repository ppa:fenics-packages/fenics-1.5.x***
- ***sudo apt-get update***
- ***sudo apt-get install -y fenics***
- ***sudo apt-get dist-upgrade***
- ***sudo apt-get install -y ipython-notebook***
- ***sudo apt-get install -y paraview***

Cleaning Fenics ppa repositories:

- ***sudo add-apt-repository --remove ppa:fenics-packages/fenics-1.5.x***
- ***sudo apt-get install ppa-purge***
- ***sudo ppa-purge ppa:fenics-packages/fenics-1.5.x*** (To be sure but redundant)

5. Installing VTK and Qt4 libraries

- ***sudo apt-get install libvtk5-dev python-vtk libvtk-java tcl-vtk libvtk5-qt4-dev***

6. Install doxygen

- **sudo apt-get install doxygen**

7. Setting up, compiling and executing TRACS in your home directory:

- ***git clone -b New_approach_semiItotals https://github.com/JulesDoc/TRACS_Concurrency***
- ***or git clone https://github.com/JulesDoc/Tracs (for GUI)***
- ***cd TRACS_Concurrency***
- ***make -j(number fo available cores on your machine)***
- ***cd ../myApp***
- **Choose one of the executable files based on your necessities.**

8. Extra step (For CERN Virtual Machines):

- **If you want to load (forward) graphical features from your VM:**
  - **edit /etc/ssh/ssh_config (need to be sudo) and modify and uncomment if neccesary the following:**
    - **ForwardAgent yes**
    - **ForwardX11 yes**
    - **ForwardX11Trusted yes**
  - **edit /etc/ssh/sshd_config edit (need to be sudo) and modify:**
    - **X11Forwarding yes**
- **save and quit.**
- **Disconnect from the VM.**
- **Connect using ssh -X**
- **Now you can launch graphical applications.**

Suggestions, comments and questions: tracs.ssd@cern.ch