Steps to add a new IO component:

1. Go inside the folder **hemps > hardware > peripherals**.

2. Put the implementation files of your IO component inside. Ex: app_injector.vhd

3. The interface of your component must be the same as in the NoC of HeMPS. Usually, the IO component must have a tx/rx ports, credit_i/credit_o ports and data_in/data_out ports.

4. Once your IO component is already implemented, you need to connect it to the HeMPS.

5. Go to **hemps.vhd** or **hemps.h-hemps.cpp** file:

    a. Create an IO Interface for your component (there is a comment on the code where you must insert such interface)

    b. Connect the respective signals of the PE that interface with your IO component (there is a comment in the code you must insert such interface). Connect the PE to the IO according the position of the IO in relation to the PE, for example, if IO is connected to the north, insert the connection inside the **io_north_connection** generate.

6. Go to **test_bench.vhd** or **testbench.h-.cpp** file:

    a. Create the signals to connect your IO component to the HeMPS

    b. Instantiate your IO component

    c. Connect HeMPS to IO component using the signals previously created

7. HeMPS requires that you put some information about the created peripheral on the .yaml file that generates the platform hardware. The required field are as the following:

IO_peripherals:

- name: [name of IO component] *this name is used to create a macro inside hemps_pkg used in hemps.vhd to index the PE connected to IO*

  pe: [x,y] *x and y position where IO will be attached*

  port:[port] *port of the PE where IO will be attached*

Example of .yaml for IO called App Injector:

```
IO_peripherals:
  - name: APP_INJECTOR
    pe: 1,1 (App Injector will be attached to PE 1x1)
    port: N (App Injector will be attached to PE 1x1 port NORTH)
```