Build Petalinux 2021.1 and BSP

首先需要的環境有

1. Ubuntu 18.04/20.04
2. PetaLinux Tools - Installer - 2021.1

建置開始

- Step 1:

  下載完 PetaLinux Tools – Installer 後

  安裝 Dependencies

  <command> sudo apt-get install gcc g++ libncurses5-dev libncursesw5-dev libtool net-tools autoconf xterm texinfo gcc-multilib gawk zlib1g libz1:i386 zlib1g-dev build-essential libtinfo5

  <command> ./petalinux-v2021.1-final-installer.run -d <自訂安裝的路徑>

  - 不能執行請先 sudo chmod -R 777

  <command> source <自訂安裝的路徑>/settings.sh

  以上便安裝完 PetaLinux Tools 與設定好環境變數

有時候同個版本像是 petalinux 2021.1 有 update 1，有加入新的 Vitis ai layers，會影響到使用，因此會建議更新 petalinux tool

---> From Network:

<command> petalinux-upgrade -u http://petalinux.xilinx.com/sswreleases/rel-v2021/sdkupdate/2021.1_update1/ -p "aarch64" --wget-args "--wait 1 -nH --cut-dirs=4"

---> From Local:

<command> petalinux-upgrade -f <Local eSDK Directory Path> -p "aarch64"

- Step 2: 創建 petalinux project

  有 BSP 檔案下：

  <command> petalinux-create -t project -s /<放 BSP 的路徑>/***.bsp -n

  proj_name(此為專案名稱與資料夾)

  <command> cd ./proj_name

  <command> ls 後可看見下圖:

```
parallels@parallels-Parallels-Virtual-Platform:~/kria_kv260$ petalinux-create -t project -s ../kria_bsp/xilinx-k26-starterkit-v2
021.1-final.bsp -n kv260_os
INFO: Create project: kv260_os
INFO: New project successfully created in /home/parallels/kria_kv260/kv260_os
parallels@parallels-Parallels-Virtual-Platform:~/kria_kv260$ cd ./kv260_os/
parallels@parallels-Parallels-Virtual-Platform:~/kria_kv260/kv260_os$ ls
components  config.project  hardware  pre-built  project-spec  README  README.hw
parallels@parallels-Parallels-Virtual-Platform:~/kria_kv260/kv260_os$
```

無 BSP 檔案下：

<command> petalinux-create --type project --template <PLATFORM> --name <PROJECT_NAME>

--template <PLATFORM> - The following platform types are supported:

- **zynqMP (for Zynq UltraScale+ MPSoC)**
- **zynq (for Zynq-7000 devices)**
- **microblaze (for MicroBlaze™ processor)**

Note: The MicroBlaze option cannot be used along with Zynq-7000 devices or Zynq UltraScale+ designs in the Programmable Logic (PL)

```
norris@ubuntu:~/zcu106_test$ ls -l
total 8
-rw-r--r-- 1 norris norris  248 Dec  7 17:39 config.project
drwxr-xr-x 5 norris norris 4096 Dec  7 17:39 project-spec
```

- **Step 3: Import XSA**
  <command> petalinux-config --get-hw-description <XSA Directory>
- **Step 4: Build Petalinux Image**
  <command> petalinux-build

- **Step 5-1: Create SD Card Image**
  <command> petalinux-package --boot --u-boot --dtb images/linux/u-boot.dtb --force
  <command> petalinux-package –wic

- **Step 5-2: Package Image to single BSP File**
  <command> petalinux-package --bsp -p <plnx-proj-root> --output <name of bsp>
  Or
  <command> petalinux-package --bsp -p <petalinux_project_path> --hwsource=<vivado_project_path> --output <name of bsp> --force

- **Step 6: 使用 balenaEtcher 燒錄至 SD 卡**