Pi Pico Xilinx Vitual Cable Programmer Setup for Gamebox Product Firmware Update

Version 0.1 ○ 16 May 2023

Sources for Files Rehosted:

Files from open source projects have been repackaged for the sake of ease for the end users following this guide. Contact Gamebox if there any issues with the rehosting and repackaging of these files. They will be removed upon request.

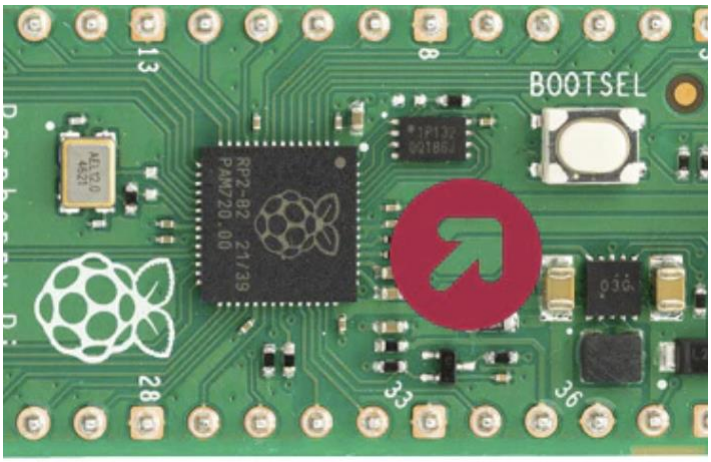
- Zadig Driver Installer
- Xilinx virtual cable binaries and host executable

Materials/Prerequisites:

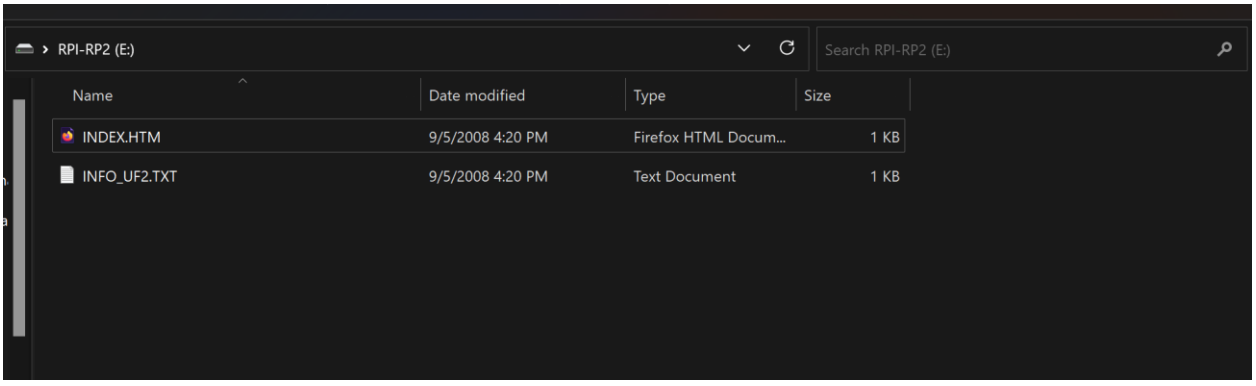
- Step 1 and step 2 completed from the Gamebox Product Firmware Update Guide
- Windows 10/11 PC
- Pi Pico or Pi Pico W
    - Pi Pico W programming over wireless connection not yet supported but hardware is supported in this guide
- Micro usb cable
- PiPicoXVCSetup.zip
- Soldering material (for connection to target PCB to be programmed)
    - Wire, headers recommended for easy soldering to Pi Pico however roughly 28awg to 32awg multistrand wire is suitable as well. ***NOTE** Single strand can be used but is not recommended as undue pressure to the wire has the potential to rip and/or tear solder pads
    - Solder

Step 1

Hold the **BOOTSEL button** on your Pico and **while holding the BOOTSEL button** plug the micro-USB cable into your PC.



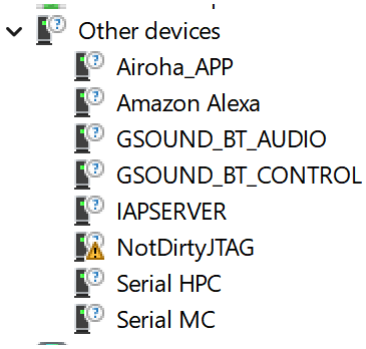
Drive “RPI-RP2” will be mounted to Windows and a file explorer window will pop up.



Click and drag or copy/paste the “dirtyJtag.uf2” provided to the drive. The drive will immediately unmount. Disconnect the Pi Pico.

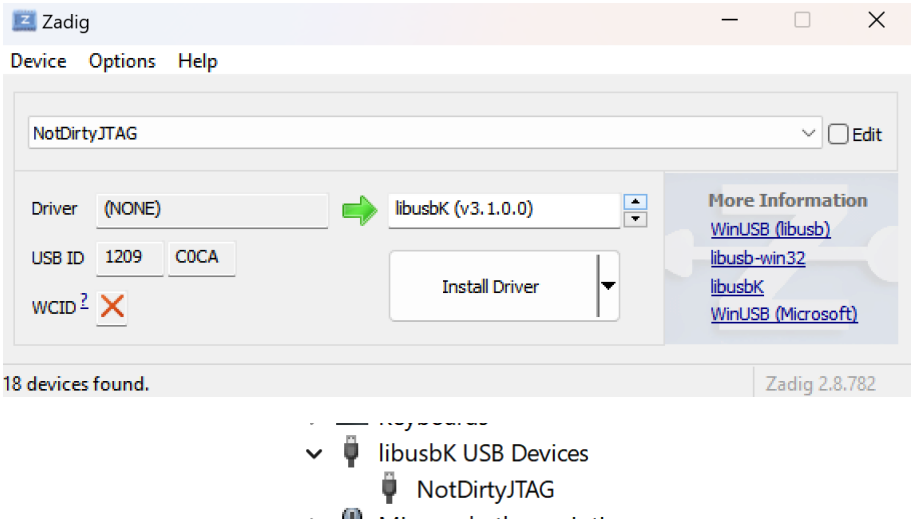
Step 2

Plug the Pi Pico back into the computer. Press “Windows key + X” and select “Device Manager” from the popup menu. In the list of devices you should see “NotDirtyJTAG” with a question mark.



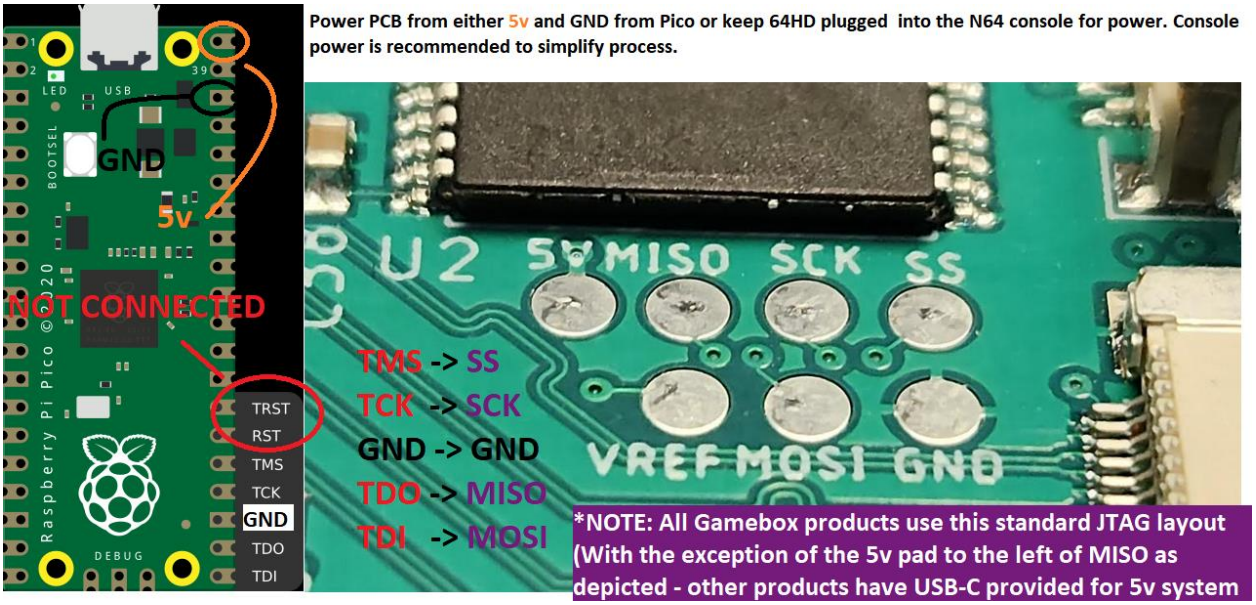
Start “zadig-2.8.exe”. From the “Options” menu, select “List All Devices”. You should now see “NotADirtyJtag” as a menu option. Use the arrows to scroll through drivers to find “libusbK (v3.1.0.0)” , click “Install Driver”. Wait for the driver installation to complete, it may take serval minutes. Once complete close zadig and unplug the Pico.

***NOTE: It’s normal if zadig times out. Go back to device manager and ensure you see the same as the image below. If you don’t, restart your computer and try the installation of the driver again!**



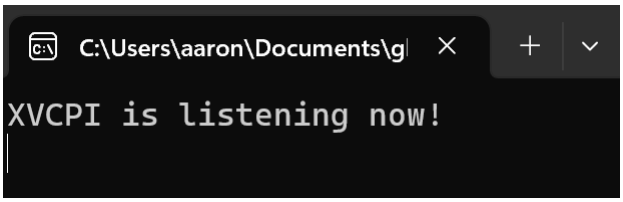
Step 3

Wire the Pi Pico to your 64HD using the following diagram. This image is included with this document if a larger view is needed.

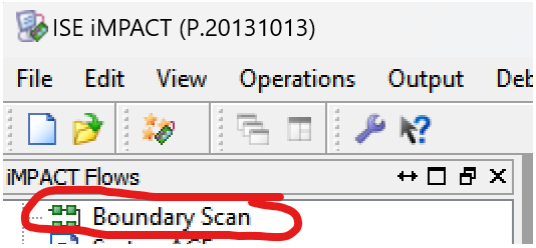


Step 4

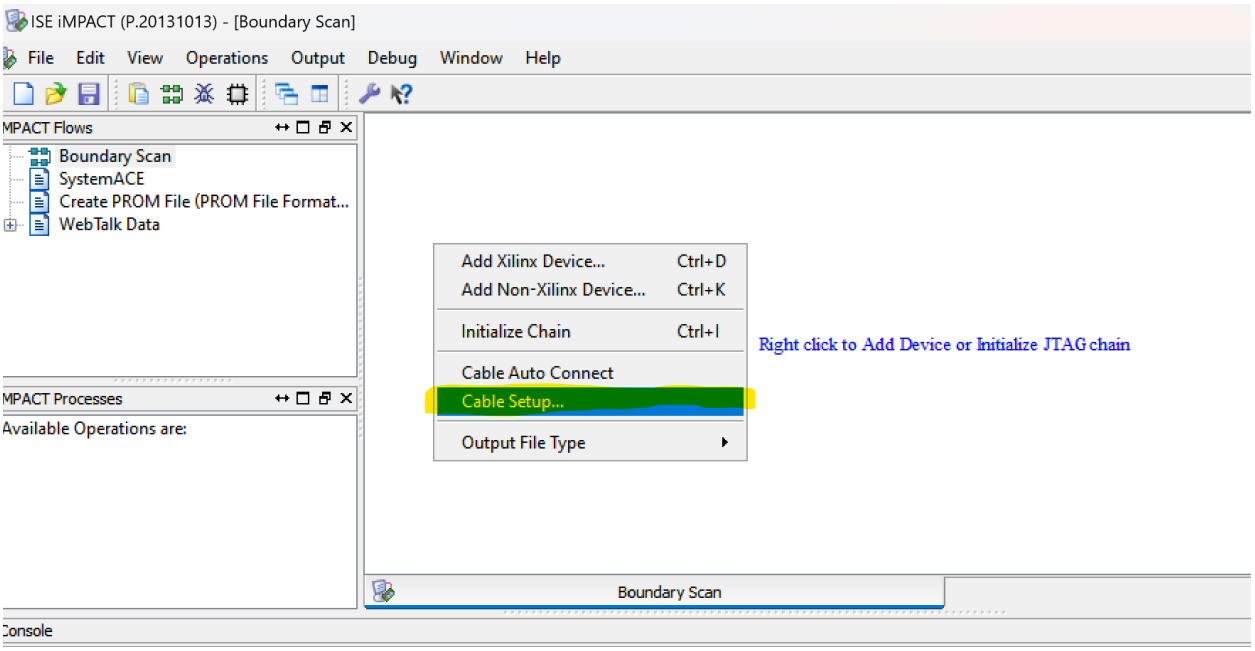
Plug the Pi Pico back into the computer with the 64HD PCB powered on (from Pico or N64, one is not recommended over the other. Whichever is more convenient) and connect. Run the included “xvcd-pico.exe” program ensuring that the “cygwin1.dll” and “cygusb-1.0.dll” files are in the same directory before running. A command prompt will pop up with the following message on screen if the Pi Pico .uc2 and driver were correctly configured/installed.



Start Xilinx iMPACT programming software (found in your start menu in apps or by searching “impact”). When the program starts, press cancel when iMPACT asks to create a project file and double click “Boundary Scan”.

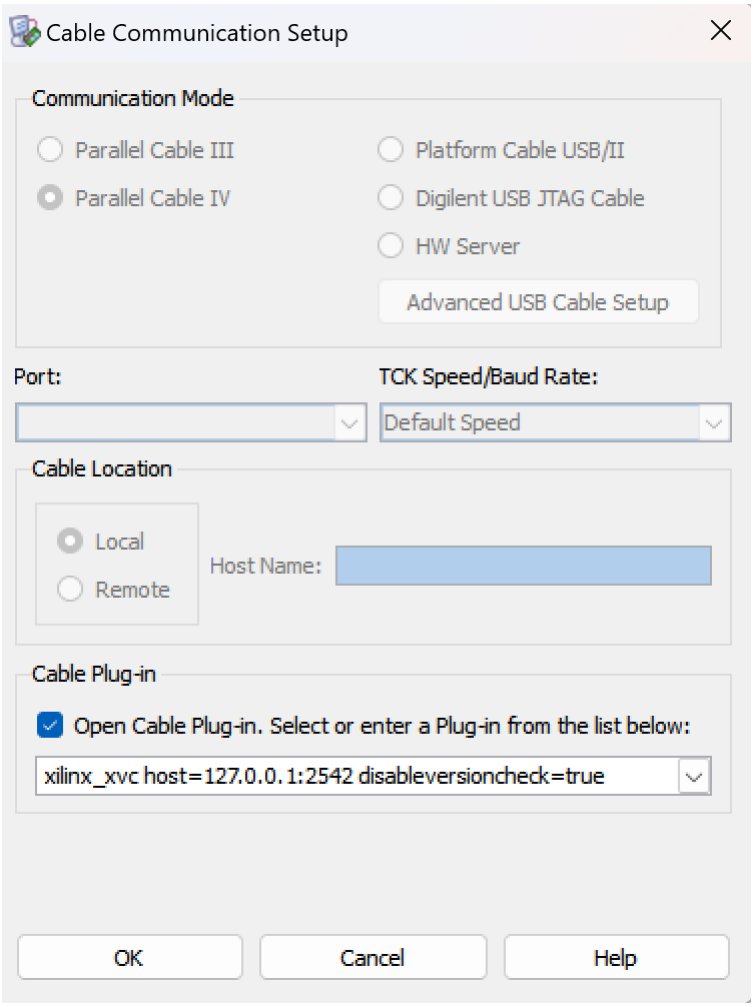


Right-click in the main window shown and select “Cable Setup…”



Check the box in the “Cable Plug-in” area and manually enter the following into the list area, do not use drop down menu. Click OK.

xilinx_xvc host=127.0.0.1:2542 disableversioncheck=true



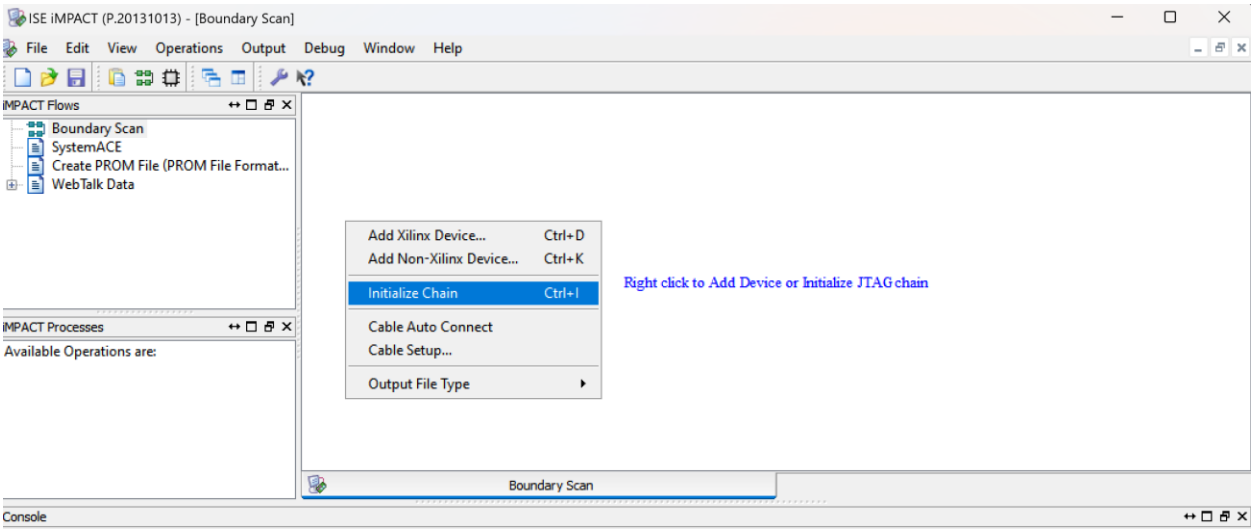
You should see the following success messages indicating iMPACT connected to the Pico successfully

```
Elapsed time =      3 sec.
// *** BATCH CMD : setCable -target "xilinx_xvc host=127.0.0.1:2542 disableversioncheck=true"
INFO:iMPACT - Socket opened successfully
```

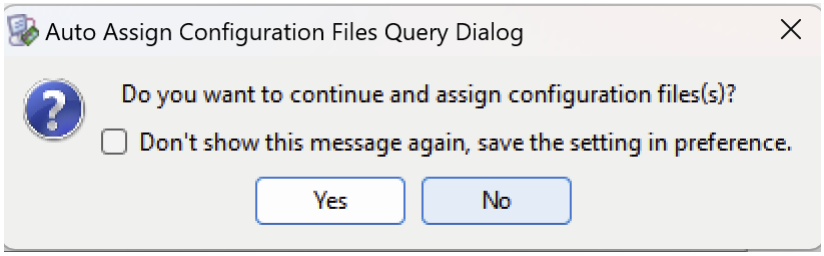
Step 5

Ensure your 64HD is powered on, connected to the Pico, and the has a solid USB connection to the computer.

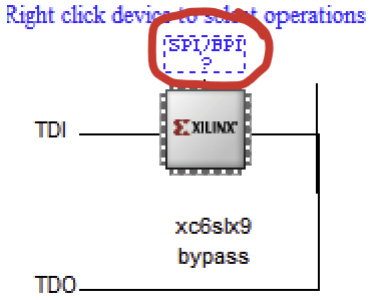
In the mainwindow press CTRL + I to initialize chain (this finds FPGA connected to Pico) **or** right-click and select “Initialize Chain”



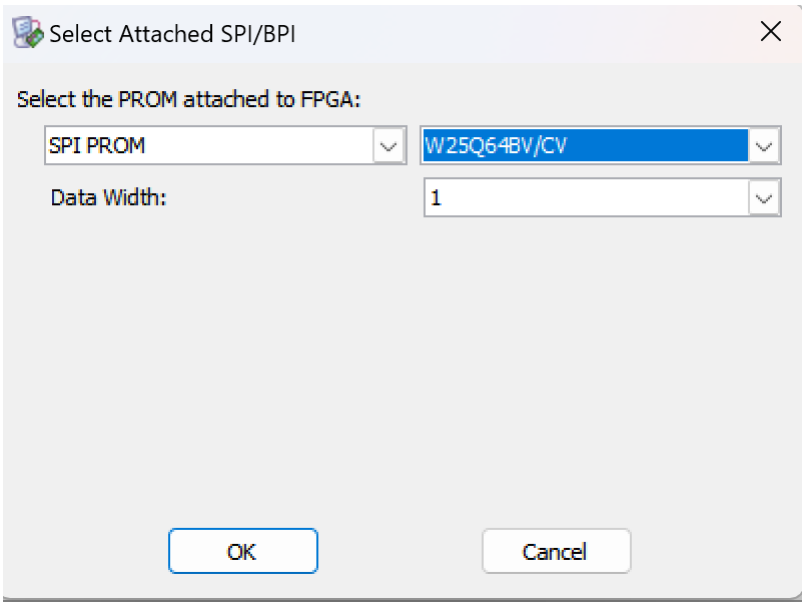
Press “No” when this dialog box appears



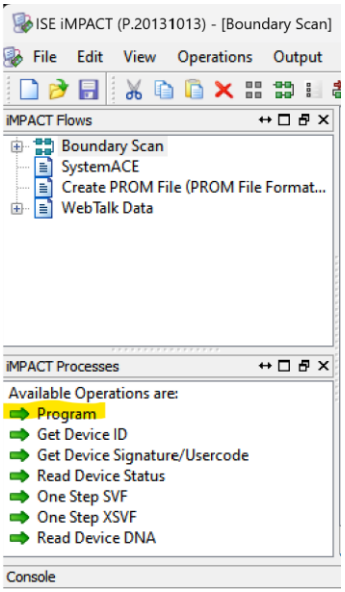
Double click on dotted box circled below and browse for the appropriate FWUPD MCS programming file



Select the following options from the configuration window and click OK



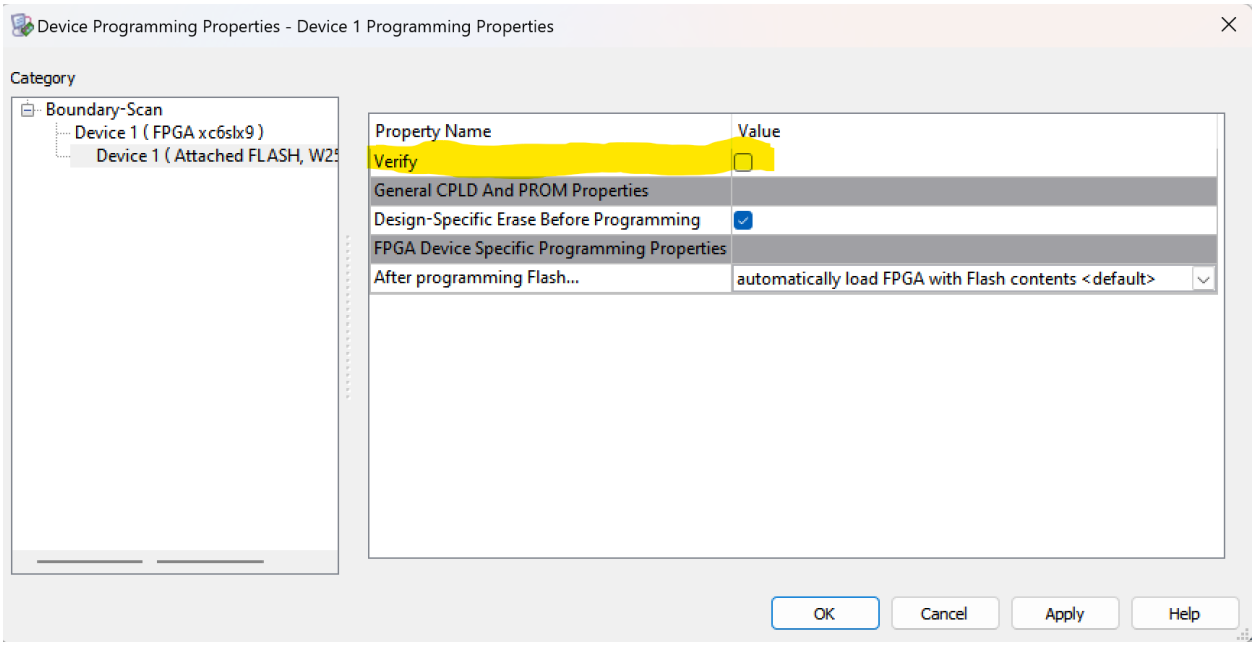
Double-click “Program”



A programming properties dialog box will appear.

IMPORTANT

UNCHECK “VERIFY” AS SHOWN. OTHERWISE, FLASHING WILL FAIL.



Congratulations! After you receive a success message, your firmware has been updated. Happy gaming!