Suzie Linux https://suzielinux.com/

Suzie Linux was named in memory of my adorable Maine Coon cat Suzie.

Suzie Linux
Beagleplay board
documentation

Author	Date	Project	Revisions
Michel Catudal	2025-04-21	**Beagleplay Linux creation**	**1**

REVISION TRACKING SHEET

Rev	Name	Date	Comment
1	Michel Catudal	2025-04-21	

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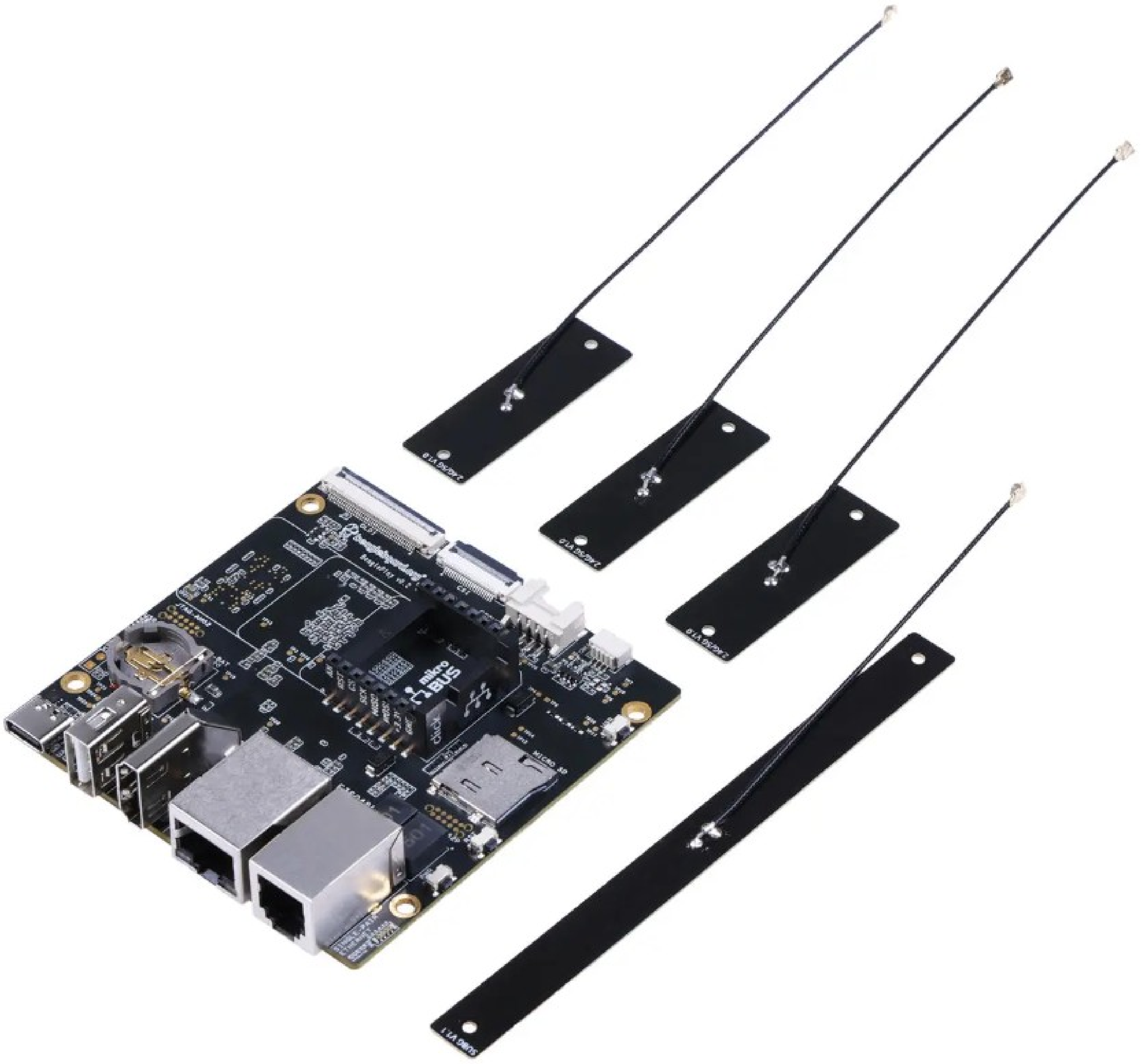
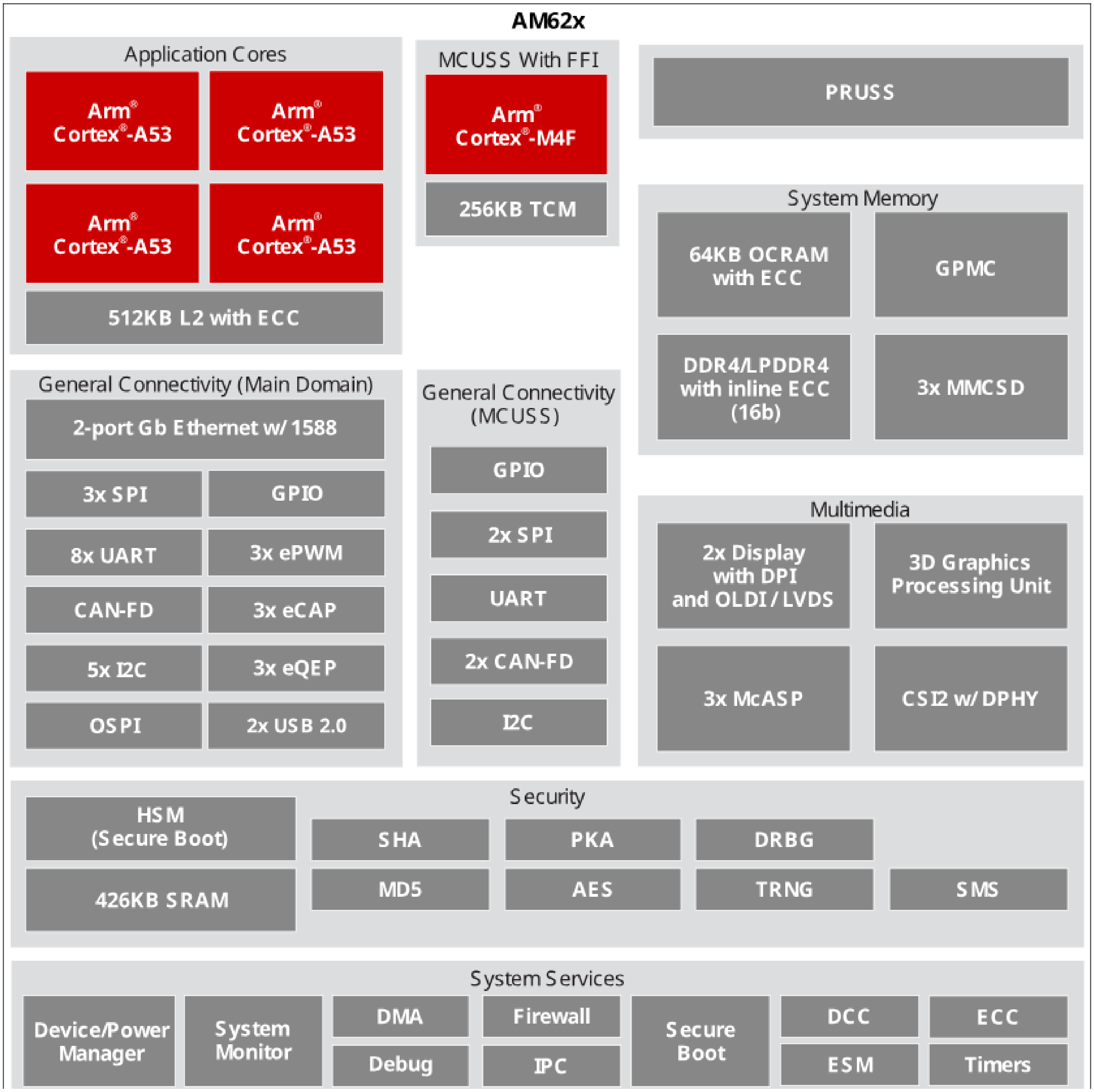
1. Hardware

1.1. Overview of the beagleplay board

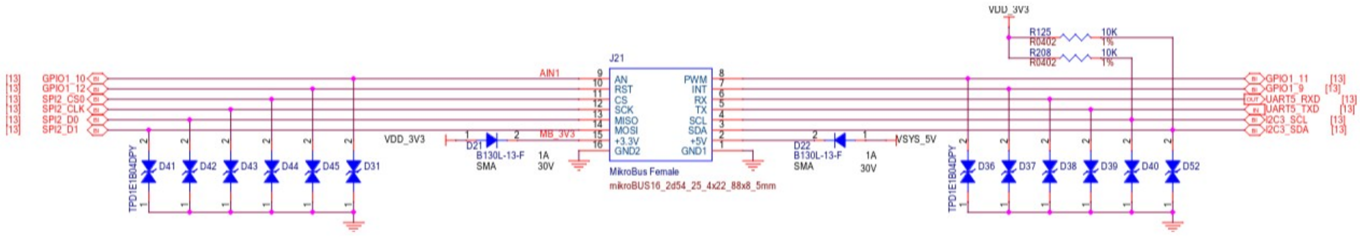


AM62x Sitara™ Processors from Texas Instruments are Human-machine-interaction SoC with Arm® Cortex®-A53-based edge AI and full-HD dual display. AM6254 which is on your BeaglePlay board has a multi core design with Quad 64-bit Arm® Cortex®-A53 microprocessor subsystem at up to 1.4 GHz, Single-core Arm® Cortex®-M4F MCU at up to 400MHz, and Dedicated Device/Power Manager. Talking about the multimedia capabilities of the processor you can connect upto two display monitors with 1920x1080 @ 60fps each, additionally there is a OLDI/LVDS (4 lanes - 2x) and 24-bit RGB parallel interface for connecting external display panels. One 4 Lane CSI camera interface is also available which has support for 1,2,3 or 4 data lane mode up to 2.5Gbps speed. The list of features is very long and if you are interested to know more about the AM62x SoC you may take a look at AM62x Sitara™ Processors datasheet.

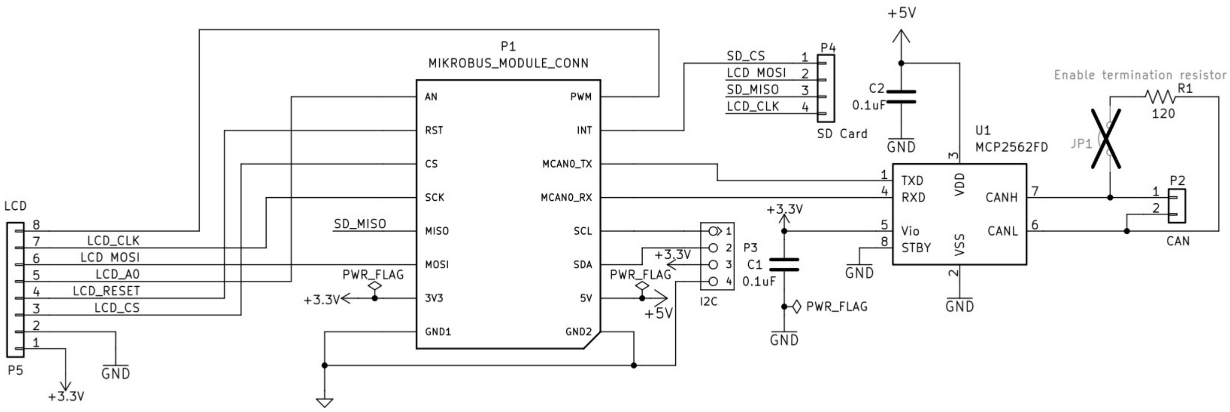


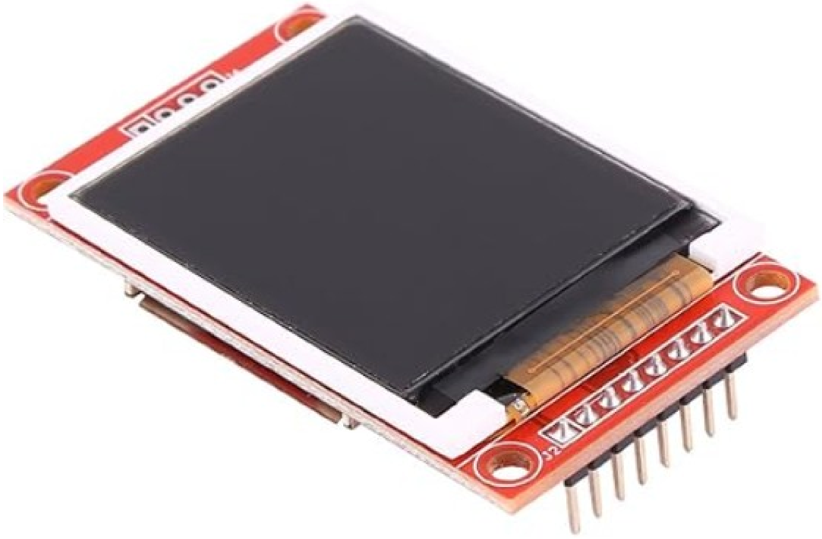
1.1.1. MIKROBUS

mikroBUS is a standard specification by MikroElektronika that can be freely used by anyone following the guidelines. It includes SPI, I2C, UART, PWM, ADC, reset, interrupt, and power (3.3V and 5V) connections to common embedded peripherals.



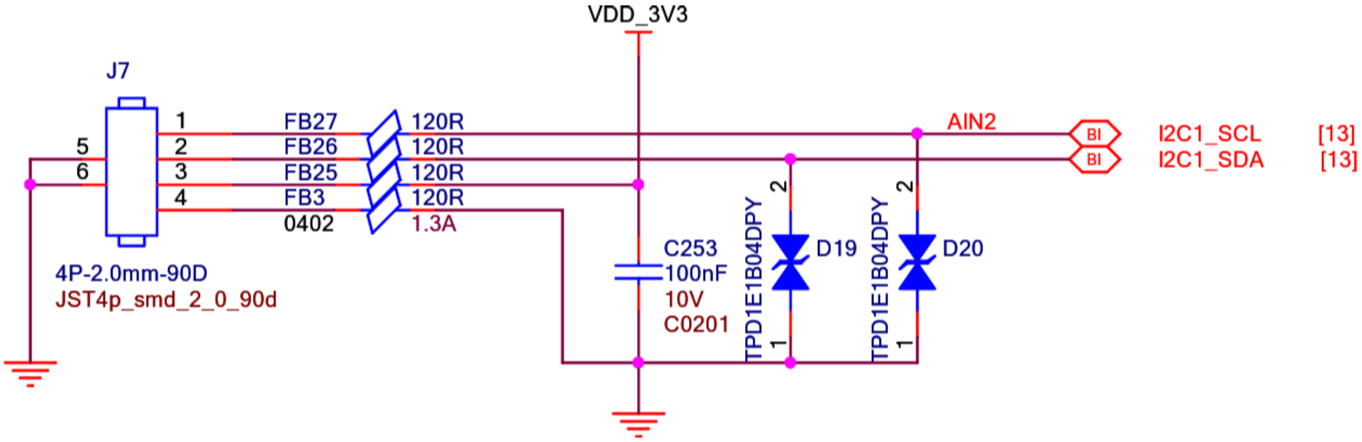
Adapter board to add small LCD and CAN drivers. The unused I2C port is connected to a grove connector.





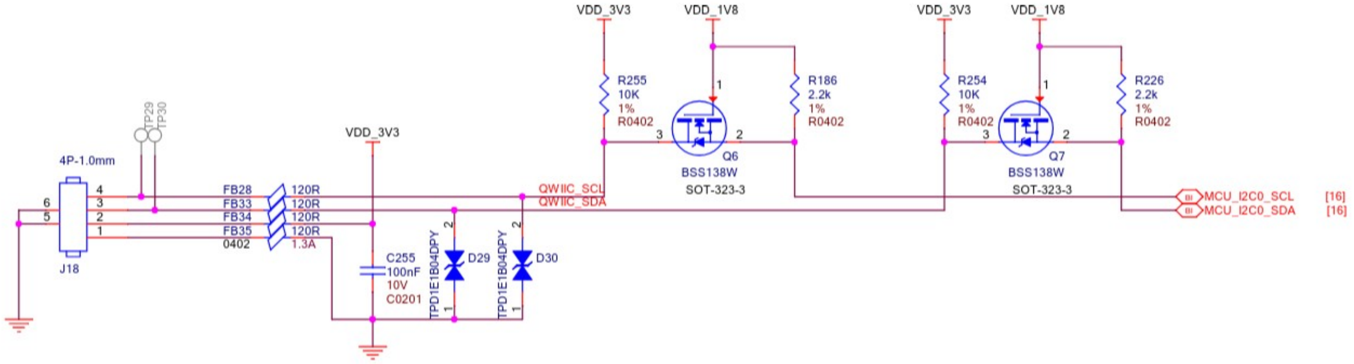
1.1.2. GROVE

Seeed Studio Grove System is a modular, standardized connector prototyping ecosystem. The Grove System takes a building block approach to assembling electronics. Compared to the jumper or solder based system, it is easier to connect devices to an application, simplifying the learning system



1.1.3. QWIIC

Qwiic, or STEMMA QT are 4pin JST SH 1.00 connectors for easy I2C connection.



2. Gentoo applications required

```
emerge --ask dev-python/cryptography
emerge --ask dev-python/pyelftools
emerge --ask dev-util/yamllint
emerge --ask dev-python/jsonschema
emerge --ask gnutls
emerge --ask flex
emerge --ask sys-devel/bc
emerge --ask bison
emerge --ask swig
emerge --ask dosfstools
emerge --ask genimage
emerge --ask mtool
emerge --ask arch-chroot
```

In order to chroot on a arm64 rootfs a few things have to be done.
First you need to make sure that the kernel supports it and emerge needed support
The build system's kernel must support miscellaneous binary formats.
This can be enabled with CONFIG_BINFMT_MISC=m
or CONFIG_BINFMT_MISC=y in the the kernel's **.config** file.

A system restart is required after building this module before it can be used.

Enable CONFIG_BINFMT_MISC

```
Executable file formats  --->
  <*> Kernel support for MISC binaries
```

USE=static-user needs to be set

QEMU_SOFTMMU_TARGETS and *QEMU_USER_TARGETS* are empty by default and must be defined to utilize *user targets*.

```
echo 'app-emulation/qemu static-user QEMU_SOFTMMU_TARGETS: * QEMU_USER_TARGETS: *' >
/etc/portage/package.use/qemu
echo 'dev-libs/glib static-libs' >> /etc/portage/package.use/qemu
echo 'sys-libs/zlib static-libs' >> /etc/portage/package.use/qemu
echo 'sys-apps/attr static-libs' >> /etc/portage/package.use/qemu
echo 'dev-libs/libpcre2 static-libs' >> /etc/portage/package.use/qemu
```

```
emerge --ask app-emulation/qemu
```

All work is done as a user, we go to a directory where we will install the files

```
cd ~
mkdir beagleplay
cd beagleplay
export work_directory=$(pwd)
```

3. Cross Compiler: 32bit arm-linux-gnueabi-gcc

If not allready installed

```
cd $HOME
mkdir -p toolchains
cd toolchains
```

3.1. Download/Extract

```
wget -c https://mirrors.edge.kernel.org/pub/tools/crosstool/files/bin/x86_64/11.5.0/
x86_64-gcc-11.5.0-nolibc-arm-linux-gnueabi.tar.xz
tar-xf x86_64-gcc-11.5.0-nolibc-arm-linux-gnueabi.tar.xz
export CC32=$HOME/toolchains/gcc-11.5.0-nolibc/arm-linux-gnueabi/bin/arm-linux-
gnueabi-
```

4. Cross Compiler: 64bit aarch64-linux-gcc

4.1. Download/Extract

```
wget  -c  https://mirrors.edge.kernel.org/pub/tools/crosstool/files/bin/x86_64/11.5.0/
x86_64-gcc-11.5.0-nolibc-aarch64-linux.tar.xz
```

```
tar -xf x86_64-gcc-11.5.0-nolibc-aarch64-linux.tar.xz

export CC64=$HOME/toolchains/gcc-11.5.0-nolibc/aarch64-linux/bin/aarch64-linux-
```

5. Bootloader

5.1. Download

```
wget https://openbeagle.org/beagleboard/u-boot-beagleplay/-/raw/main/build_u-boot.sh
```

5.2. Build

comment out these two lines :

```
CC32=arm-linux-gnueabihf-
CC64=aarch64-linux-gnu-

chmod a+x build_u-boot.sh
./build_u-boot.sh
```

The generated files can be found on the directory public:

```
bl31.bin
tee-pager_v2.bin
tiboot3.bin
tispl.bin
```

6. Linux Kernel

```
cd $work_directory

git clone https://github.com/SuzieLinux/Linux-Files.git
mv Linux-Files/getKernel.sh ./
chmod a+x getKernel.sh
./getKernel.sh
mkdir deploy
mkdir deploy/tmp
cd linux-6.12-ti-arm64-r13
make ARCH=arm64 CROSS_COMPILE=${CC64} distclean
make ARCH=arm64 CROSS_COMPILE=${CC64} bb.org_defconfig
```

If you want to modify the default .config use menuconfig
You may want to adjust the number of cores to use
If you use too many cores you won't be able to do anything else

```
make -j16 ARCH=arm64 CROSS_COMPILE=${CC64} menuconfig
make -j16 ARCH=arm64 CROSS_COMPILE=${CC64} Image modules
make -j16 ARCH=arm64 CROSS_COMPILE=${CC64} dtbs

make ARCH=arm64 CROSS_COMPILE=${CC64} modules_install INSTALL_MOD_PATH=../deploy/tmp
make ARCH=arm64 CROSS_COMPILE=${CC64} dtbs_install INSTALL_DTBS_PATH=../deploy/tmp
cp arch/arm64/boot/Image ../deploy
```

7. Create extlinux.conf file

```
echo 'label Linux' > extlinux.conf
echo 'kernel /Image' >> extlinux.conf
echo 'fdtdir /' >> extlinux.conf
echo 'append console=ttyS2,115200n8 earlycon=ns16550a,mmio32,0x02800000
root=/dev/mmcblk1p2 ro rootfstype=ext4 rootwait net.ifnames=0' >> extlinux.conf
```

7.1. Copy kernel and u-boot files

```
export kernel_version=6.12.0-suzie+
mkdir input
cd input
cp -Rp ../deploy/tmp/lib/modules ./
cp ../linux-6.12-ti-arm64-r13/.config config-$kernel_version
```

The next part is done as root

```
su
chown root:root -R modules
cd modules/$kernel_version
rm build
ln -s /usr/src/linux build
cd $work_directory/input
tar cvfJ modules-$kernel_version.tar.xz modules
chown $USER:$USER modules-$kernel_version.tar.xz
rm -rf modules
cp -Rp ../linux-6.12-ti-arm64-r13 ./
sync
chown root:root -R linux-6.12-ti-arm64-r13
cd linux-6.12-ti-arm64-r13
make mrproper
rm -rf .git
cd ..
tar cvfJ linux-$kernel_version-source.tar.xz linux-6.12-ti-arm64-r13
chown $USER:$USER linux-$kernel_version-source.tar.xz
rm -rf linux-6.12-ti-arm64-r13
exit
cp ../deploy/tmp/ti/k3-am625-beagleplay.dtb ./
cp ../deploy/Image ./
cp ../public/u-boot.img ./
cp ../public/tiboot3.bin ./
cp ../public/tispl.bin ./
cd ../
tar cvfJ beagleplay_misc-boot-files.tar.xz input genimage.cfg
```

7.2. Content of genimage.cfg used to generate the image

```
image boot.vfat {
        vfat {
            files = {
                    "tispl.bin",
                    "u-boot.img",
                    "Image",
                    "tiboot3.bin",
                    "k3-am625-beagleplay.dtb"
            }
            file extlinux/extlinux.conf {
                    image = extlinux.conf
            }
        }
        size = 256M
}
image sdcard.img {
        hdimage {
        }
        partition u-boot {
                partition-type = 0xC
                bootable = "true"
                image = "boot.vfat"
        }
        partition rootfs {
                partition-type = 0x83
                image = "arch_rootfs.ext4"
        }
}
```

8. Arch Linux Root File System

```
export rootfs_dir=$work_directory/arch_rootfs

cd $work_directory
```

8.1. Download

```
wget http://os.archlinuxarm.org/os/ArchLinuxARM-aarch64-latest.tar.gz
```

8.2. Create a root file System

```
mkdir -p $rootfs_dir
sudo tar xfvp ArchLinuxARM-aarch64-latest.tar.gz -C $rootfs_dir
sudo sync
sudo rm -rf $rootfs_dir/boot/*
sudo cp /usr/bin/qemu-aarch64 $rootfs_dir/usr/bin
sudo cp /etc/locale.gen $rootfs_dir/etc
```

Create some alias :

```
cd $rootfs_dir/etc
echo 'alias ll='ls -alF'' > $rootfs_dir/root/.bashrc
echo 'alias la='ls -A''  >> $rootfs_dir/root/.bashrc
echo 'alias l='ls -CF''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias dir='ls -la -N --color''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias rm='rm -i'' >> $rootfs_dir/root/.bashrc
echo 'alias del='rm -i''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias rd=rmdir' >> $rootfs_dir/root/.bashrc
echo 'alias md='mkdir -p''  >> $rootfs_dir/root/.bashrc
cd $work_directory
```

8.3. chroot into archlinux rootfs

```
sudo arch-chroot $rootfs_dir
source /etc/profile
export PS1="(chroot) $PS1"
```

First we need to uninstall the kernel so archlinux updates won't brick the board

```
pacman -R linux-aarch64
```

We need a user to create some missing programs

```
userdel alarm
useradd -m suzie
```

Here I create simple passwords, after we boot the micro sd we can change them to more secured password. For all our settings in chroot this approach makes work simple. In both case it will ask to confirm the password.

For the root password : passwd
For the suzie user password : passwd suzie

We need to do a system update
CheckSpace needs to be commented in /etc/pacman.conf

To enable mirrors, edit /etc/pacman. d/mirrorlist and locate your geographic region. Uncomment mirrors you would like to use.

```
rm -r /etc/pacman.d/gnupg
pacman-key --init
pacman-key --populate archlinux
pacman -Syy
pacman -Syu
pacman -S base-devel
locale-gen
pacman -S wget subversion git
```

Set the locale in /etc/locale.conf to your language
Example :

```
LANG="fr_CA.UTF-8"
LC_COLLATE="C.UTF-8"
```

Then run this :

```
source /etc/profile
```

We need to create some package
One is joe which is similar to wordstar editor
I then create links to ws so simulate the old CPM/80 and dos wordstar

```
su suzie
cd /home/suzie

mkdir arch_packages
cd arch_packages
wget https://aur.archlinux.org/cgit/aur.git/snapshot/joe.tar.gz
wget https://aur.archlinux.org/cgit/aur.git/snapshot/systemd-gadget.tar.gz

tar xvf joe.tar.gz
rm joe.tar.gz
tar xvf systemd-gadget.tar.gz
rm systemd-gadget.tar.gz

cd joe....
```

Change arch to arch='aarch64' and run this :

```
makepkg
cd ../systemd-gadget
makepkg
exit
pacman -U /home/suzie/arch_packages/joe/joe-4.6-2-aarch64.pkg.tar.xz
pacman -U /home/suzie/arch_packages/systemd-gadget/systemd-gadget/systemd-gadget-0.0.1-1-any.pkg.tar.xz
```

To leave chroot type exit

9. Create Arch Linux micro SD boot disk

```
export kernel_version=6.12.0-suzie+
export input_dir=$work_directory/input
export rootfs_dir=$work_directory/arch_rootfs
export archlinux_dir=$work_directory/archlinux
```

9.1. Copy Kernel Files

```
su
```

we create a directory for Archlinux, first delete the old one if any

```
mkdir $archlinux_dir
cd $archlinux_dir
tar xvf ../beagleplay_misc-boot-files.tar.xz

cd $rootfs_dir/etc
echo '/dev/mmcblk1p1  /boot vfat user,uid=1000,gid=1000,defaults 0 2' >> /fstab
echo '/dev/mmcblk1p2  /  ext4  noatime,errors=remount-ro  0  1' >> fstab

cd $rootfs_dir/lib
tar xvf $input_dir/modules-$kernel_version.tar.xz

cd $rootfs_dir/usr/src
tar xvf linux-$kernel_version-source.tar.xz
ln -s linux-6.12-ti-arm64-r13 linux
cp $input_dir/config-$kernel_version ./

cd $rootfs_dir
sudo tar cvfJ $archlinux_dir/archlinux_beagleplay.tar.xz *
exit
```

9.2. Create archlinux rootfs.ext4 image

We use some bash scripts to do the image

```
------------------------------------------------------------
#!/bin/bash
#
# Script to create Archlinux rootfs.ext4 for the pocketbeagle2 board

# Copyright (C) 2025 Michel Catudal
# Michel Catudal <michelcatudal@gmail.com>
#
# SPDX-License-Identifier:      GPL-2.0+
#
# Force to english

LC_ALL=C

set -x # echo on

work_directory=$(pwd)
rootfs_file="$work_directory/archlinux_beagleplay-rootfs.xz"

uncomp_size=$(xz --robot --list "$rootfs_file" | grep ^totals | cut -f5)
echo $uncomp_size
COUNT1="$(($uncomp_size/4000000))"
echo $COUNT1
COUNT="$(($COUNT1+150))"
echo $COUNT
dd if=/dev/zero of=$work_directory/input/rootfs.ext4 bs=4M count=$COUNT

# If the rootfs directory does not exist, it will be created
mkdir -p $work_directory/rootfs

mkfs.ext4 $work_directory/input/rootfs.ext4
mount $work_directory/input/rootfs.ext4 $work_directory/rootfs

echo "Extracting filesystem on micro SD image ..."
tar xvf $rootfs_file -C $work_directory/rootfs
sync
------------------------------------------------------------
sudo ./mk_archlinux_rootfs.sh
sudo chown $USER:$USER input/rootfs.ext4
```

It creates a file name rootfs.ext4 located in directory input

```
genimage --rootpath `mktemp` --config genimage.cfg
```

go on root with su
Change sdd for whatever your micro SD is on
Make sure that it is unmounted

```
cd images
dd if=sdcard.img of=/dev/sdd status=progress iflag=direct oflag=direct bs=4M
```

Remove and put the micro SD back in the slot
Use gparted to expand the ext4 partition to fill the sd card

10. Gentoo Linux Root File System

```
export rootfs_dir=$work_directory/gentoo_rootfs

cd $work_directory
```

10.1. Download

Since this changes often it may be better to go to https://www.gentoo.org/downloads/
and choose the latest arm64 stage 3 openrc
We don't have a display so there is no need for the Destktop

```
latest_stage3=20250413T230515Z/stage3-arm64-openrc-20250413T230515Z.tar.xz

wget https://distfiles.gentoo.org/releases/arm64/autobuilds/$latest_stage3
```

10.2. Create a root file System

```
mkdir -p $rootfs_dir
sudo tar xfvp stage3-arm64-openrc-20250413T230515Z.tar.xz -C $rootfs_dir
sudo sync
sudo cp /usr/bin/qemu-aarch64 $rootfs_dir/usr/bin
sudo cp /etc/locale.gen $rootfs_dir/etc
sudo cp /etc/resolv.conf $rootfs_dir/etc
```

Create some alias :

```
echo 'alias ll='ls -alF'' > $rootfs_dir/root/.bashrc
echo 'alias la='ls -A''  >> $rootfs_dir/root/.bashrc
echo 'alias l='ls -CF''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias dir='ls -la -N --color''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias rm='rm -i'' >> $rootfs_dir/root/.bashrc
echo 'alias del='rm -i''  >> $rootfs_dir/root/.bashrc
echo ''  >> $rootfs_dir/root/.bashrc
echo 'alias rd=rmdir' >> $rootfs_dir/root/.bashrc
echo 'alias md='mkdir -p''  >> $rootfs_dir/root/.bashrc

echo '>=x11-libs/libxkbcommon-1.8.0 X' > $rootfs_dir/etc/package.use/X
echo '=app-editors/joe-4.6-r2 **' > $rootfs_dir/etc/package.accept_keywords/joe
```

10.3. chroot into gentoo rootfs

```
cd $work_directory
sudo arch-chroot $rootfs_dir
source /etc/profile
export PS1="(chroot) $PS1"
```

We need a user for later login thru ssh

```
useradd -m suzie
```

Here I create simple passwords, after we boot the micro sd we can change them to more secured password. For all our settings in chroot this approach makes work simple. In both case it will ask to confirm the password.

For the root password : passwd

For the suzie user password : passwd suzie

```
emerge-webrsync
eselect profile set 15
emaint --auto sync
```

Edit /etc/portage/make.conf
Example between ------:
Blocking of sandbox stuff is needed to be able to compile anything in chroot
You could remove it once you boot the disk and don't plan on using chroot on it in the future

```
------------------------------------
COMMON_FLAGS="-O2 -pipe"
CFLAGS="${COMMON_FLAGS}"
CXXFLAGS="${COMMON_FLAGS}"
FCFLAGS="${COMMON_FLAGS}"
FFLAGS="${COMMON_FLAGS}"

CHOST="aarch64-unknown-linux-gnu"

LINGUAS="fr fr_CA en en_US es es_AR es_BO es_CL es_CO es_CR es_CU
 es_DO es_EC es_ES es_GT es_HN es_MX es_NI es_PA es_PE
 es_PR es_PY es_SV es_US es_UY es_VE
 zh zh_CN zh_HK zh_SG zh_TW"

L10N="fr fr-CA en en-US es es-AR es-BO es-CL es-CO es-CR es-CU
 es-DO es-EC es-ES es-GT es-HN es-MX es-NI es-PA es-PE
 es-PR es-PY es-SV es-US es-UY es-VE
 zh zh-CN zh-HK zh-SG zh-TW"
ACCEPT_LICENSE="*"

FEATURES="-test -pid-sandbox -network-sandbox -sandbox -usersandbox -ipc-sandbox
-selinux -sesandbox -collision-detect"

USE="${ARCH} -zeitgeist -beagle -pcmcia -selinux -bindist buildpkg -pid-sandbox
-network-sandbox -sandbox -usersandbox -ipc-sandbox -sesandbox -seccomp -systemd dbus
elogind jpeg a52 gif x265 x264 -test pulseaudio qt6 tinfo gtk++ -bindist scanner -audit"


GENTOO_MIRRORS="ftp://mirrors.tera-byte.com/pub/gentoo \
http://gentoo.mirrors.tera-byte.com/ \
rsync://mirrors.tera-byte.com/gentoo \
ftp://mirror.csclub.uwaterloo.ca/gentoo-distfiles/ \
https://mirror.csclub.uwaterloo.ca/gentoo-distfiles/ \
http://mirror.csclub.uwaterloo.ca/gentoo-distfiles/ \
rsync://mirror.csclub.uwaterloo.ca/gentoo-distfiles \
https://mirror.clarkson.edu/gentoo/ \
http://mirror.clarkson.edu/gentoo/ \
rsync://mirror.clarkson.edu/gentoo/ \
http://www.gtlib.gatech.edu/pub/gentoo \
rsync://rsync.gtlib.gatech.edu/gentoo \
https://mirrors.mit.edu/gentoo-distfiles/ \
http://mirrors.mit.edu/gentoo-distfiles/ \
rsync://mirrors.mit.edu/gentoo-distfiles/ \
https://gentoo.osuosl.org/ \
http://gentoo.osuosl.org/ \
https://mirrors.rit.edu/gentoo/ \
http://mirrors.rit.edu/gentoo/ \
ftp://mirrors.rit.edu/gentoo/ \
rsync://mirrors.rit.edu/gentoo/ \
http://gentoo-mirror.flux.utah.edu/"

PORTDIR_OVERLAY="/usr/local/portage/suzie"
LC_MESSAGES=C.utf8
------------------------------------
```

For the suzie portage overlay

On this overlay there are two directories

suzie and metadata

The suzie repository has has two directories

profile and metadata

Both metadata directories have a file named layout.conf which contains :

```
masters = gentoo
auto-sync = false
```

The profiles has a file name repo_name which contains the word suzie

To set the locale you check which locales are available with:
eselect locale list. If your /etc/locale.gen file has few items the list would be short

```
[69]  fr_CA.UTF-8 *
```

If the one with the * is not the one you want you use the set command to the right one

Here I had selected number 69

For example, to set to Mandarin that would be 57

```
[57]  zh_CN.utf8
```

```
eeselect locale set 57
```

For the time eastern time zone

```
ln -s /usr/share/zoneinfo/America/Detroit /etc/localtime
emerge --ask joe
```

Setup some links to simulate the wordstar editor name

```
cd /usr/bin
ln -s joe ws
cd /etc/joe
cp jstarrc wsrc
```

This part will take quite a bit of time 115 programs to install

```
emerge --ask --verbose --update --deep --newuse @world
emerge --ask dev-vcs/git subversion
emerge --ask openssh
rc-update add sshd default
gpasswd -a suzie wheel
```

If you want to be able to ssh as root add this line to /etc/ssh/sshd_config :

```
PermitRootLogin yes
```

To leave chroot type exit

```
cd $work_directory/input/gentoo_rootfs
sudo tar cvfJ $work_directory/gentoo-pocketbeagle2-rootfs.xz *
```

11. Create Gentoo Linux micro SD boot disk

```
export kernel_version=6.12.0-suzie+
export input_dir=$work_directory/input
export rootfs_dir=$work_directory/gentoo_rootfs
export gentoo_dir=$work_directory/gentoo
```

11.1. Copy Kernel Files

```
cd $work_directory

su
```

we create a directory for Gentoo, first delete the old one if any

```
mkdir $gentoo_dir
cd $gentoo_dir
tar xvf ../pocketbeagle2-misc-boot-files.tar.xz

cd $rootfs_dir/etc
echo '/dev/mmcblk1p1  /boot vfat user,uid=1000,gid=1000,defaults 0 2' >> fstab
echo '/dev/mmcblk1p2  /  ext4  noatime,errors=remount-ro  0  1' >> fstab

cd $rootfs_dir/lib
tar xvf $input_dir/modules-$kernel_version.tar.xz

cd $rootfs_dir/usr/src
tar xvf linux-$kernel_version-source.tar.xz linux-$kernel_version
ln -s linux-$kernel_version linux
cp $input_dir/config-$kernel_version ./

exit
```

11.2. Create gentoo rootfs.ext4 image

We use a bash script to do the image

```
------------------------------------------------------------
#!/bin/bash
#
# Script to create Gentoo rootfs.ext4 for the pocketbeagle2 board

# Copyright (C) 2025 Michel Catudal
# Michel Catudal <michelcatudal@gmail.com>
#
# SPDX-License-Identifier:      GPL-2.0+
#

# Force to english

LC_ALL=C

set -x # echo on

work_directory=$(pwd)
rootfs_file="$work_directory/gentoo-beagleplay-rootfs.xz"

uncomp_size=$(xz --robot --list "$rootfs_file" | grep ^totals | cut -f5)
echo $uncomp_size
COUNT1="$(($uncomp_size/4000000))"
echo $COUNT1
COUNT="$(($COUNT1+150))"
echo $COUNT
dd if=/dev/zero of=$work_directory/input/rootfs.ext4 bs=4M count=$COUNT

# If the rootfs directory does not exist, it will be created
mkdir -p $work_directory/rootfs

mkfs.ext4 $work_directory/input/rootfs.ext4
mount $work_directory/input/rootfs.ext4 $work_directory/rootfs

echo "Extracting filesystem on micro SD image ..."
tar xvf $rootfs_file -C $work_directory/rootfs
sync
------------------------------------------------------------
```

```
sudo ./mk_gentoo_rootfs.sh
sudo chown $USER:$USER input/rootfs.ext4
```

It creates a file name rootfs.ext4 located in directory input

```
genimage --rootpath `mktemp` --config genimage.cfg
```

go on root with su
Change sdd for whatever your micro SD is on
Make sure that it is unmounted

```
cd images
```

```
dd if=sdcard.img of=/dev/sdd status=progress iflag=direct oflag=direct bs=4M
```

Remove and put the micro SD back in the slot
Use gparted to expand the ext4 partition to fill the sd card