

U
S
E
R

H
D
D

L
D
D

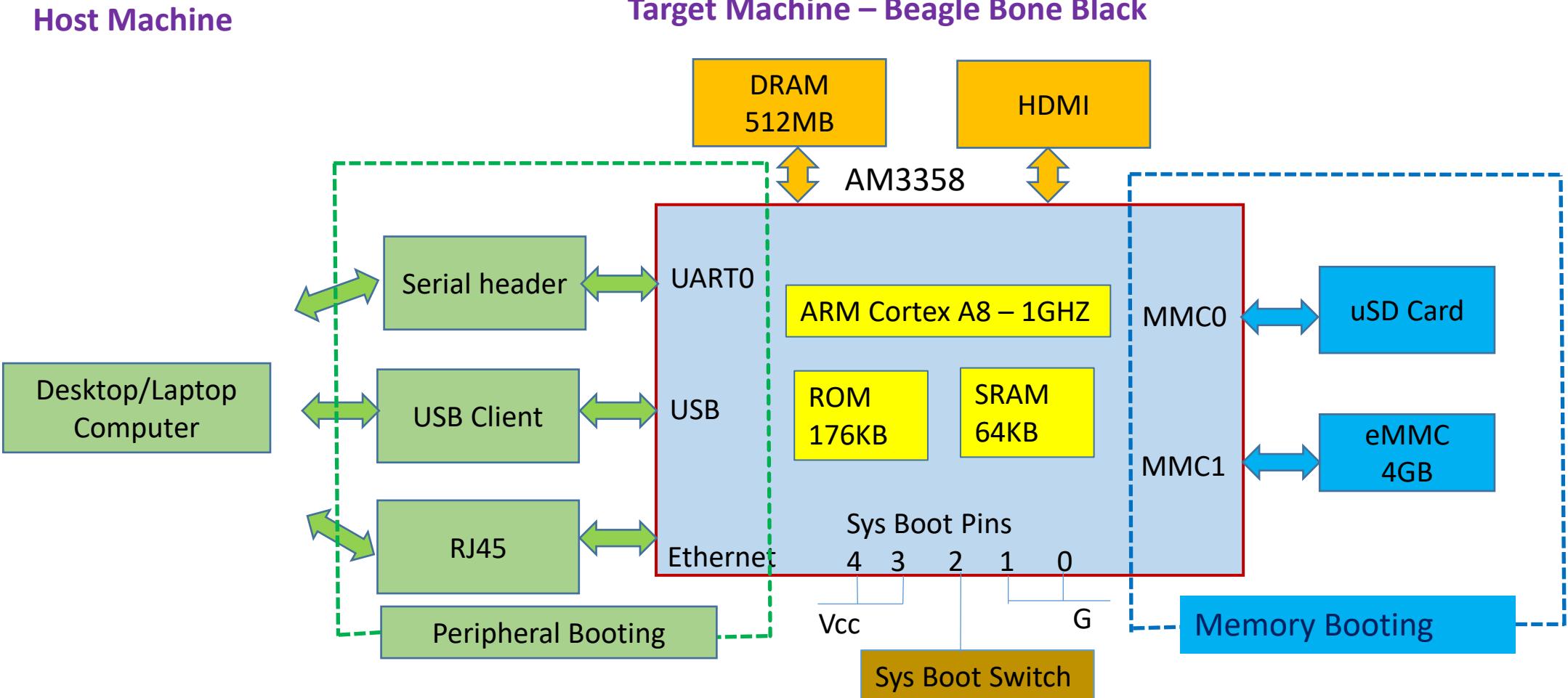
I2C Framework Diagrams

Source Code Flow



KERNEL MASTERS

Embedded Linux Boot Sequence

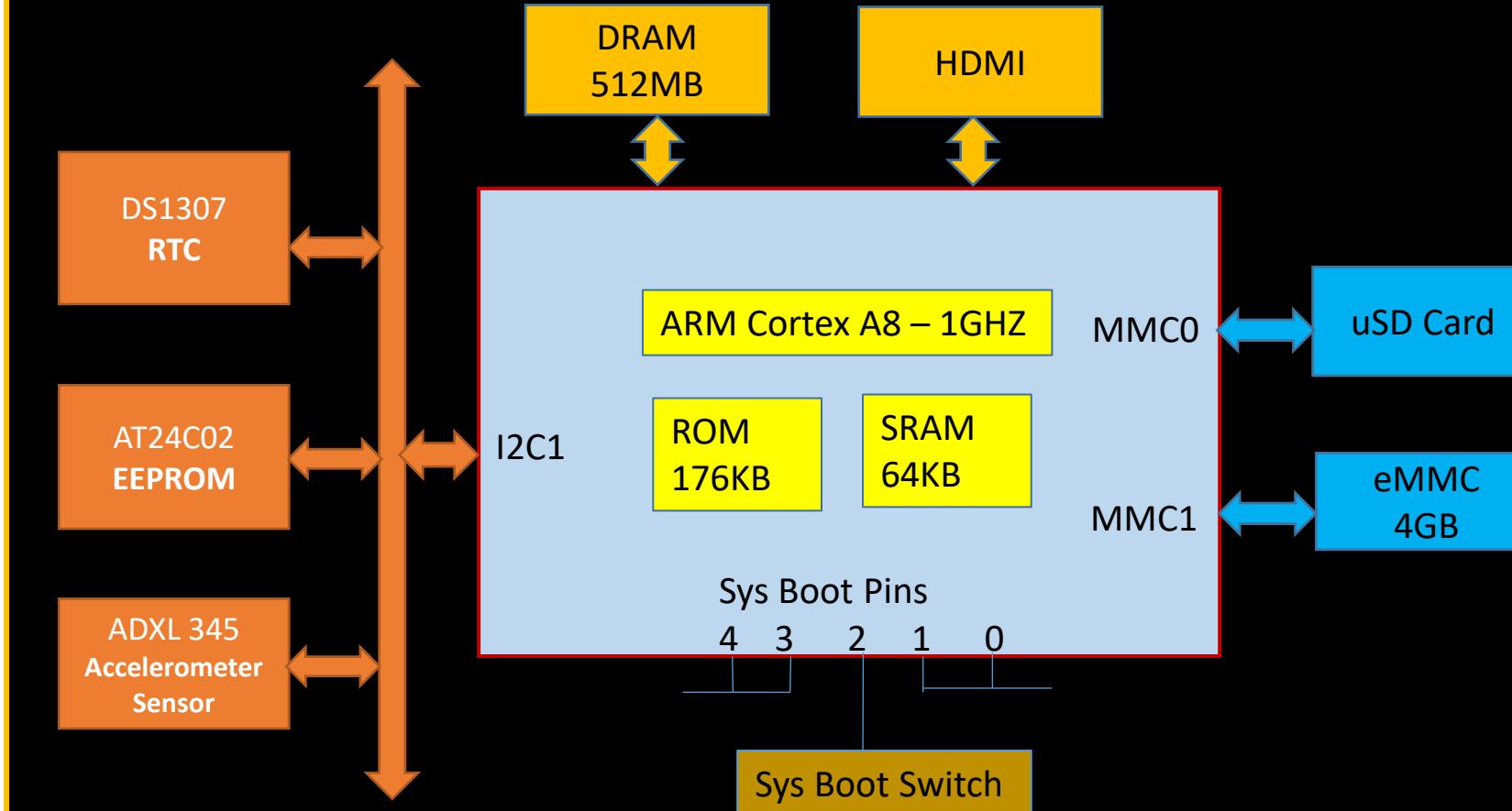


Sysboot SW	Sysboot pins	1 st Order	2 nd Order	3 rd Order	4 th Order
OFF	11100	MMC1	MMC0	UART0	USBO
ON	11000	SPI0	MMC0	USBO	UART0



KERNEL MASTERS

I2C – AM335x Interface with Beagle Bone Black



I2C

AM335X I2C Controller Basic Framework



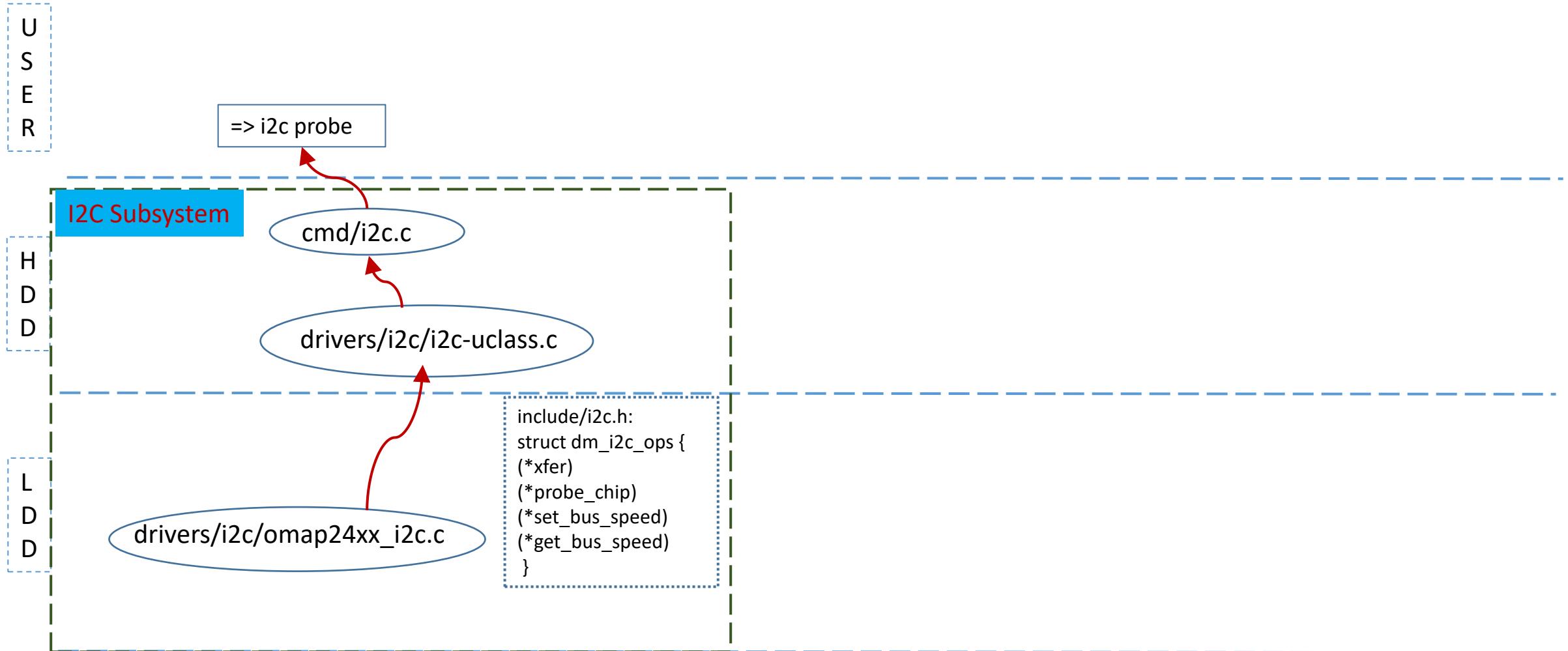
KERNEL MASTERS

Framework

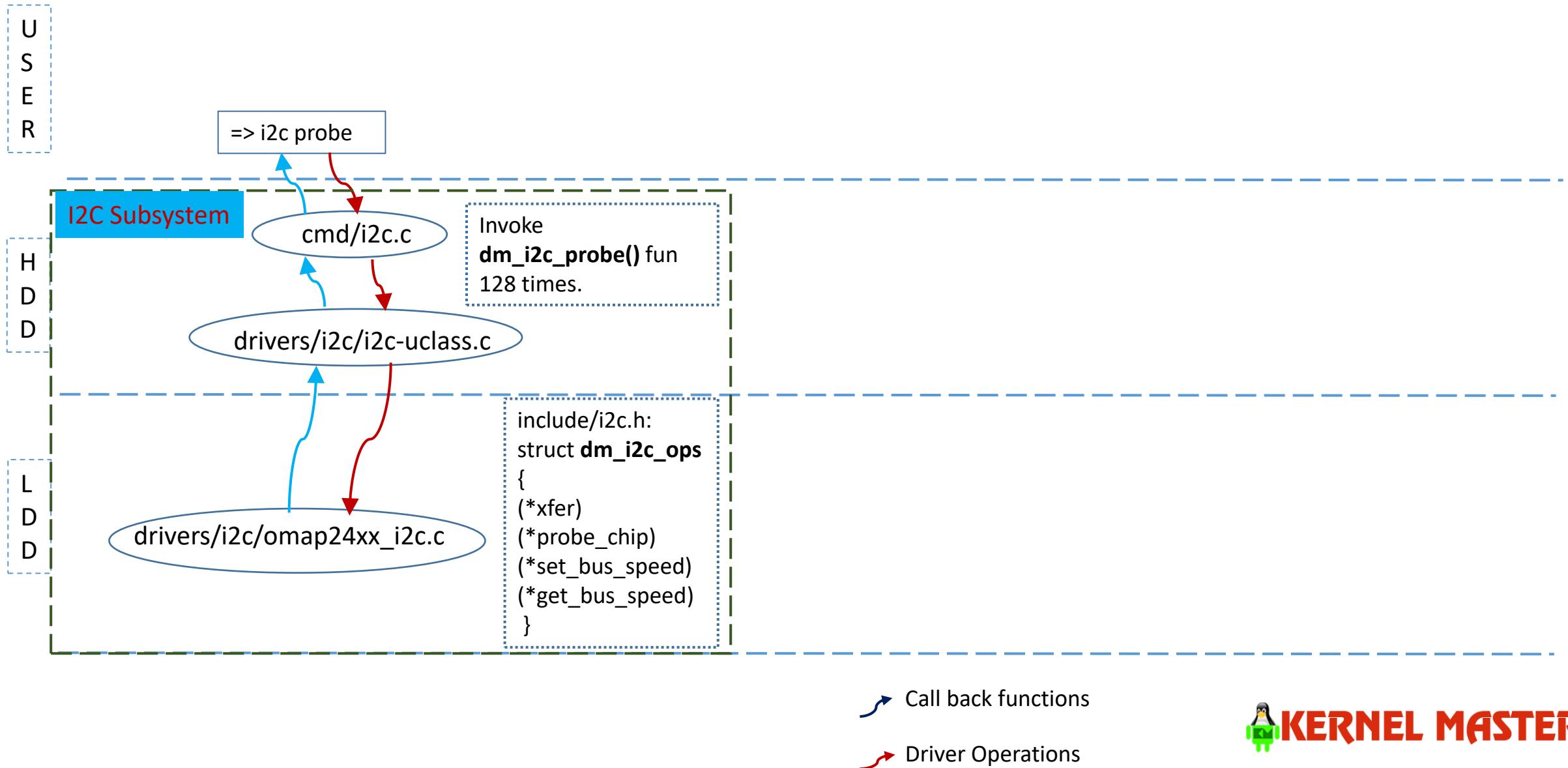
Two types of framework

1. I2C Driver Initialization
2. I2C Driver Operation

I2C Master Initialization Framework in U-boot



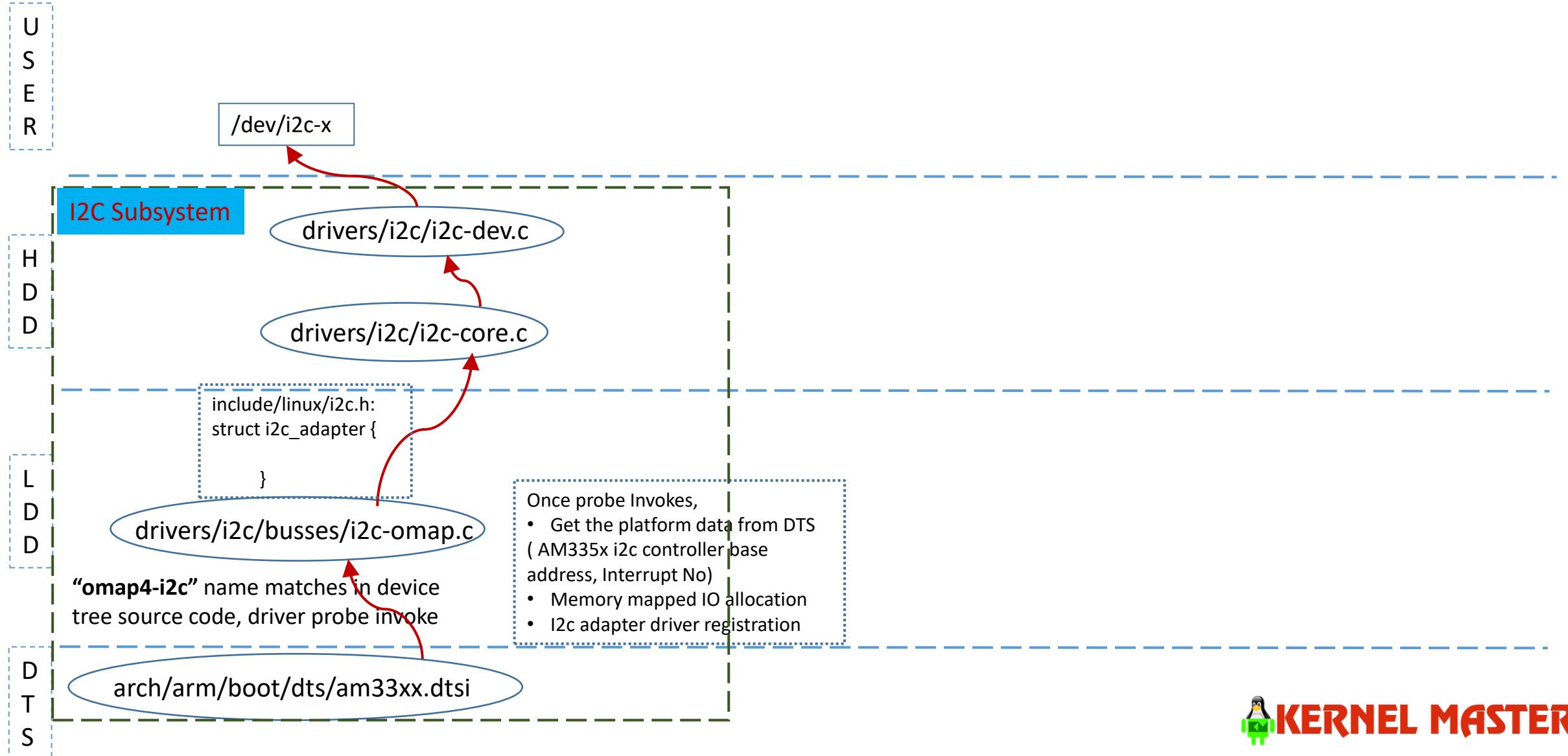
I2C Master Operation Framework in U-boot



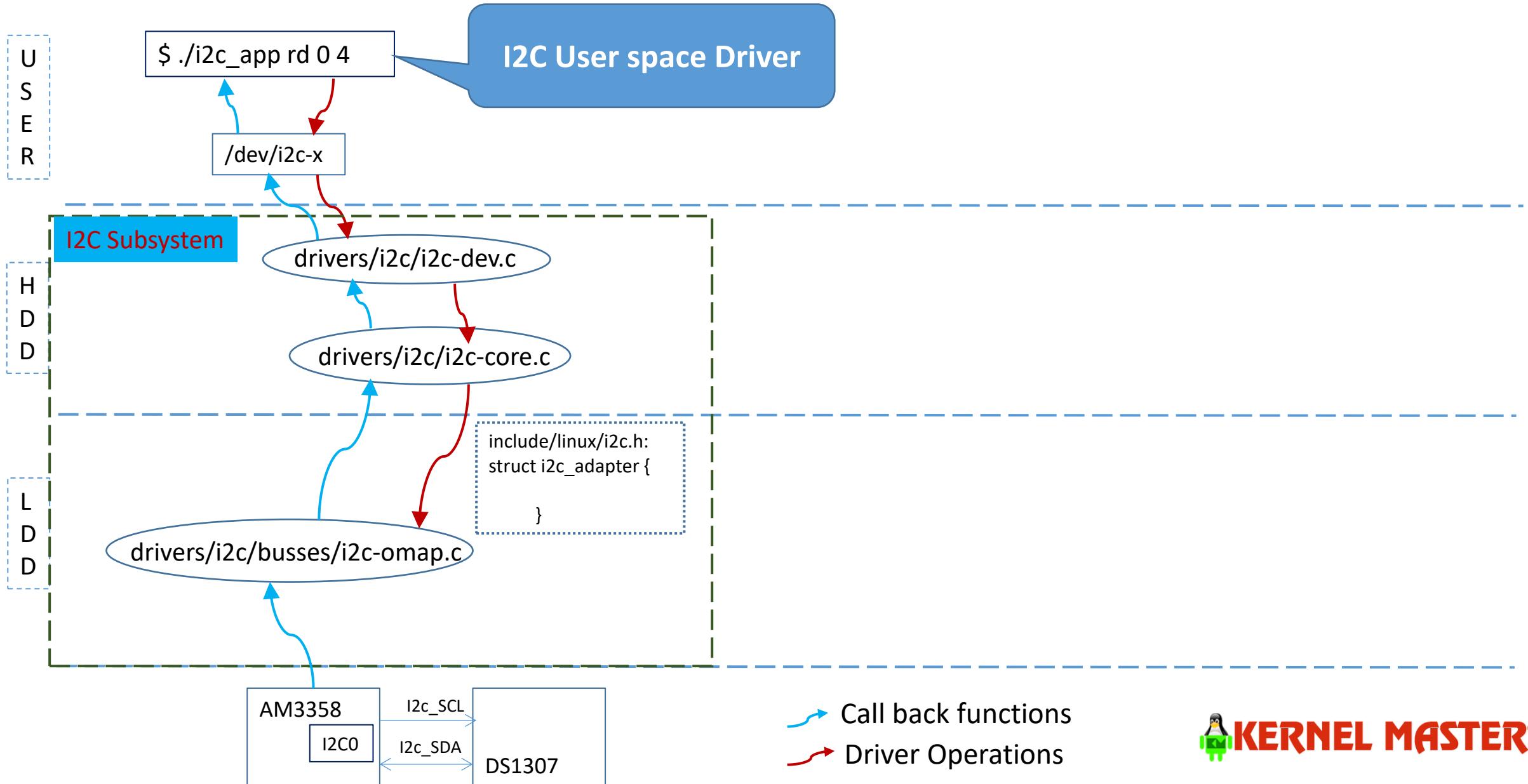
I2C Framework in Kernel

AM335X I2C Controller Basic Framework

I2C Master Initialization Framework in Kernel



I2C Master Operation Framework in Kernel



I2C Interface

DS1307 RTC Interface with AM335X I2C Controller

I2C & RTC Initialization Framework in Kernel



U
S
E
R

H
D
D

L
D
D

D
T
S

/dev/i2c-x

/proc/drivers/rtc

/dev/rtcx

/sys/class/rtc

I2C Subsystem

drivers/i2c/i2c-dev.c

drivers/i2c/i2c-core.c

```
include/linux/i2c.h:  
Struct i2c_adapter {  
}
```

drivers/i2c/busses/i2c-omap.c

"omap4-i2c" name matches in device tree source code, driver probe invoke

arch/arm/boot/dts/am33xx.dtsi

RTC Subsystem

drivers/rtc/proc.c

drivers/rtc/interface.c

```
include/linux/i2c.h:  
Struct i2c_adapter {  
}
```

```
include/linux/rtc.h:  
Struct rtc_class_ops {  
    (*read_time)  
    (*set_time)  
}
```

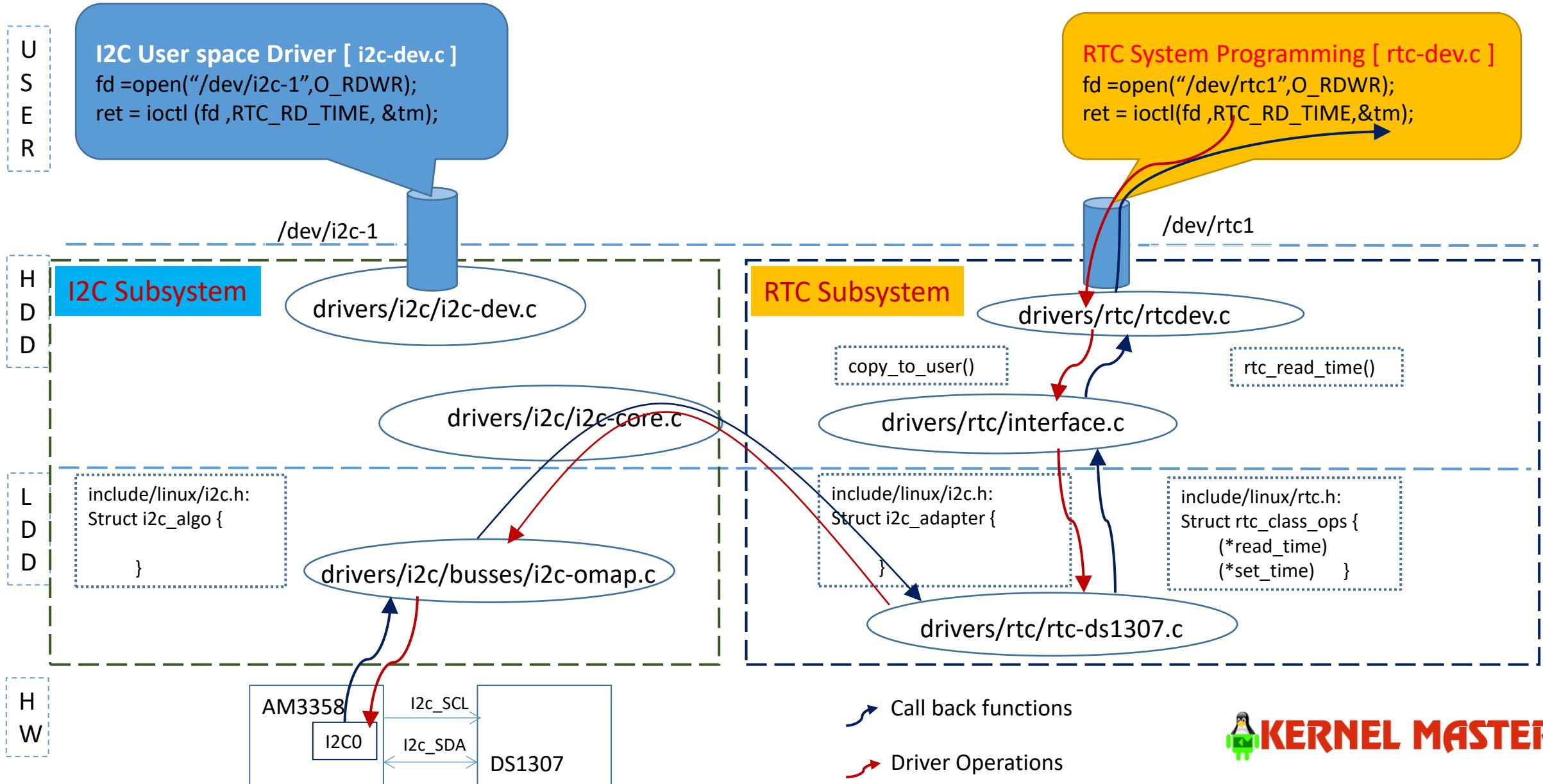
drivers/rtc/rtc-ds1307.c

"ds1307" name matches in device tree source code, driver probe invoke

- Once probe Invokes,
- Get the platform data from DTS (Slave Address, Clock Frequency)
 - Interrupt registration If required.
 - RTC Device Initialization (Linkup Low level driver RTC operations with High Level RTC operations).
 - I2c client driver initialization.

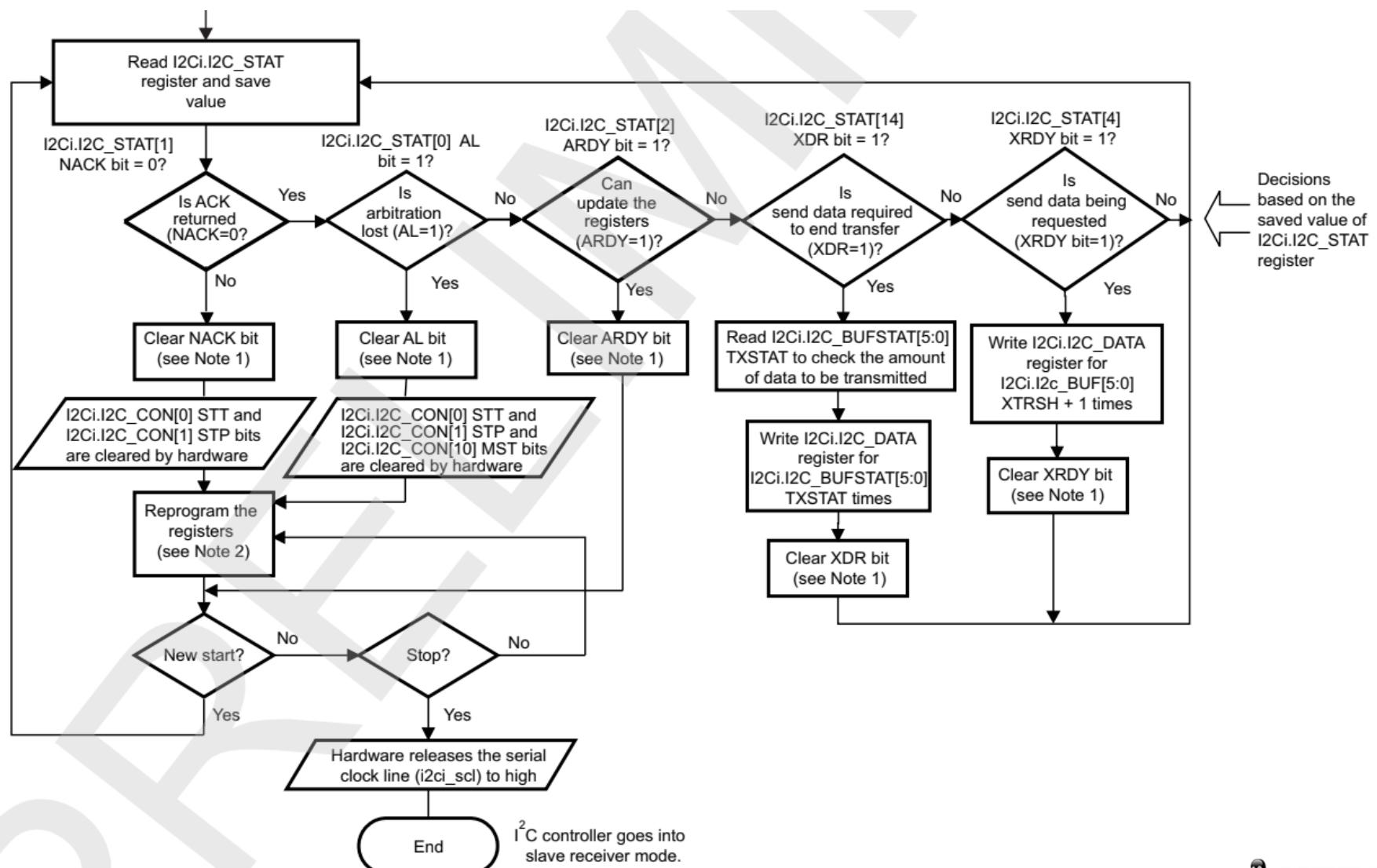
arch/arm/boot/dts/am335x-boneblack.dts

I2C & RTC Operation Framework in Kernel



KERNEL MASTERS

I²C Master Transmit – Polling Method



I²C Master Transmit – Interrupt Method

