

OMAP3 Video Driver Status

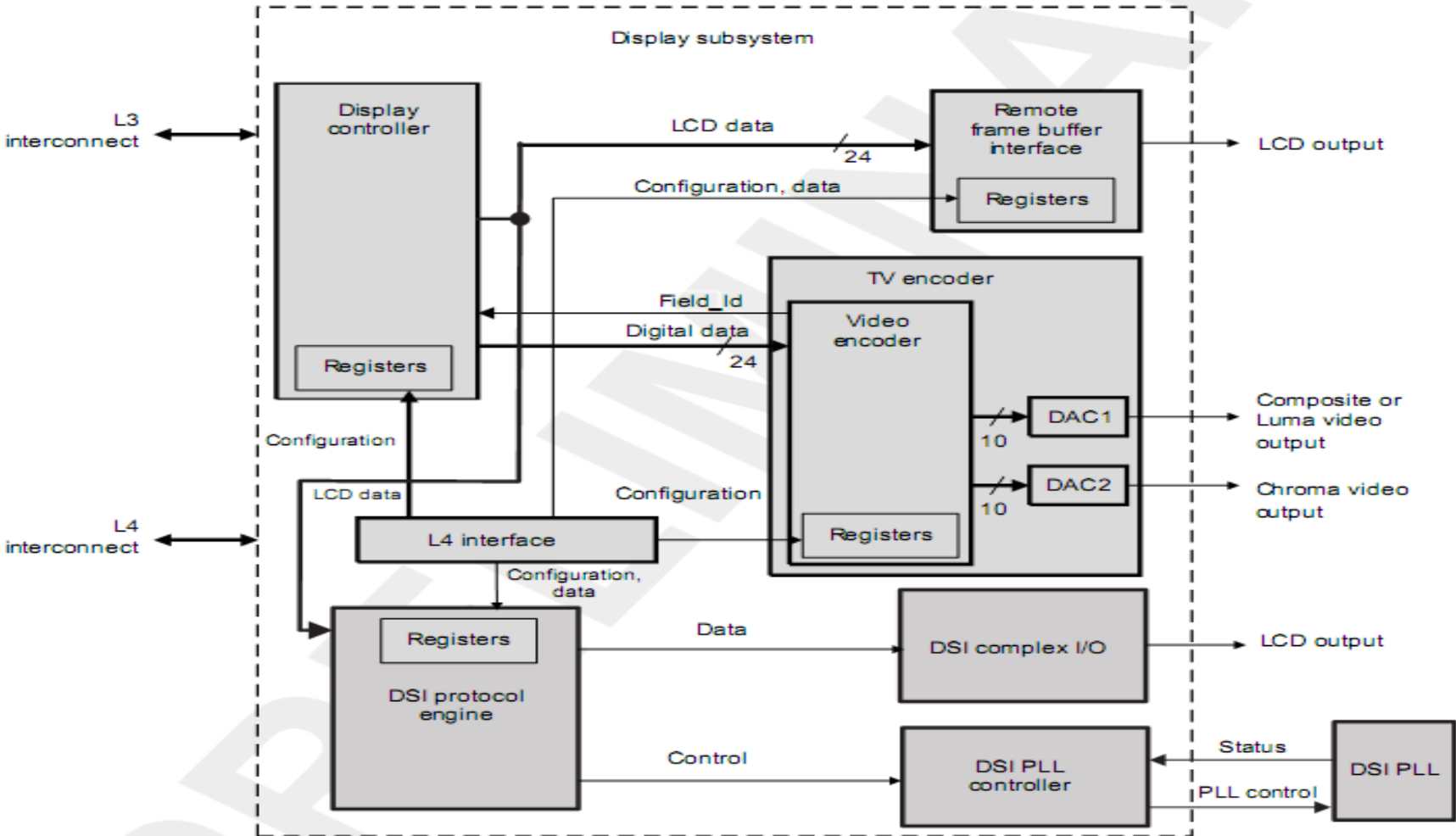
- By Vaibhav Hiremath

14th – 17th June 2010 (V4L2 Mini-Summit, Finland)

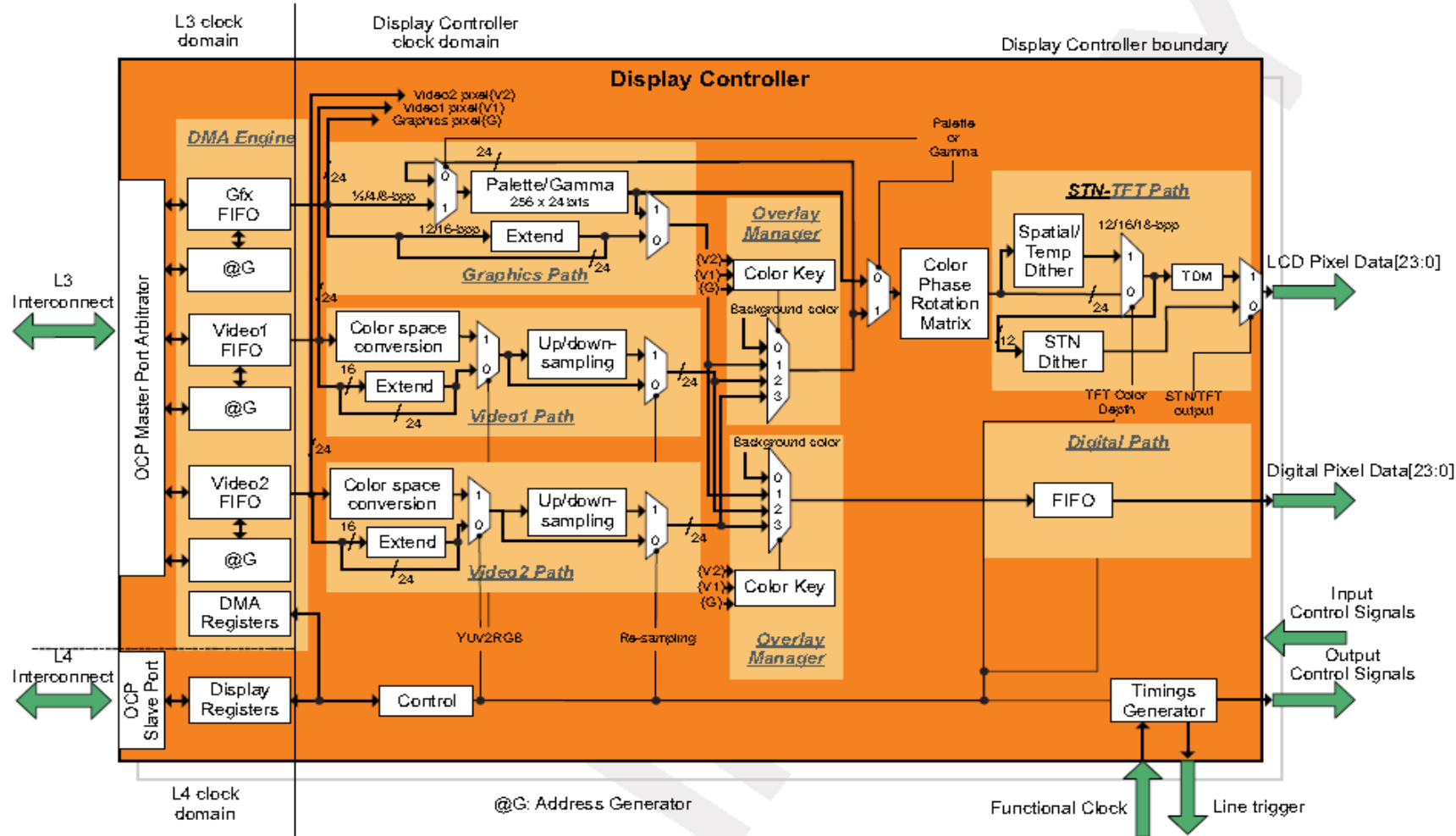
Introduction/Topics

- DSS Architecture (Overview)
- Current state of DSS Drivers
- Is Media-Controller (Fbdev->V4L2) good fit for DSS
- Current state of ISP Drivers
- Summary

OMAP3x DSS Architecture



OMAP3x DSS Architecture: Display Controller



Current State of DSS Drivers

- DSS2
 - Very well maintained with layered architecture [[Click here](#)]
 - Exported as library API's with function pointer based interface
- Frame-Buffer driver
 - Supports all the planes (GFX, Vid1, Vid2) through compile time option
- V4L2 Display Driver
 - Only support Video planes (Vid1 and Vid2)
- SYSFS: Configuration of common interfaces [[Click here](#)]
 - Output control, Dynamic switching
 - Color keying, Background color
- Features not supported
 - TDM (Time Division Multiplexing)
 - Support of S_OUTPUT/G_OUTPUT in V4L2 Driver

Is Media-Controller (Fbdev->V4L2) good fit for DSS

- Compile time option for Fbdev<->Plane link
 - CONFIG_FB_OMAP2_NUM_FBS
- SYSFS Dependency
 - Standard interface for switching of outputs
 - Standard interface for some of the control,
 - V4L2_CID_ROTATE/BG_COLOR
 - V4L2_FBUF_FLAG_SRC_CHROMAKEY
- Well defined framework to handle multiple sub-devices, specially for
 - External peripherals like, DVI where you have I2C interface
 - HDMI, where we need both Audio and Video control
 - Video-Buf layer
- OMAP4 and sub-sequent future such SoC's
 - Write-back path
 - In-Built HDMI encoder

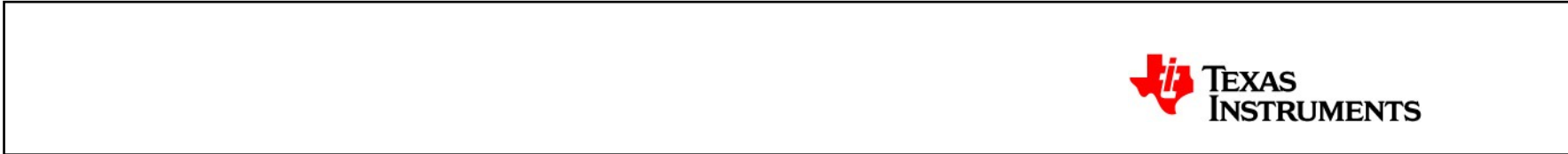
Current State of ISP-Camera Drivers

- All old releases (till the date) uses old V4L2-Int framework for Camera interfaces.
- All old releases (till the date) uses Independent char driver interfaces for Mem-To-Mem drivers
- In the phase of migrating to Media-Controller.
 - Successfully tested Mem-To-Mem under MC framework.
- Committed to integrate media-controller for next major release milestone (projected around Sept End)

Summary

	OMAP3 Fbdev	OMAP3 V4L2	Media Controller For DSS2	ISP Camera over Media- Controller	ISP Mem-To-Mem over Media- Controller	Migration Of Fbdev -> V4L2
Implementation	Done	Done	Need to decide	Work in progress at Nokia and TI	Work in progress at Nokia and TI and at final stage	Community Alignment required
Open Source Submission/Avail ability in main- line kernel	Done	Done	Need to decide	Work in progress at Nokia and TI	Work in progress at Nokia and TI	Community Alignment required

Note: The plan is to finish with all OMAP3x related activities before last quarter of this year.



Thank You !!!

Contact me here: hvaibhav@ti.com

List of Files/Illustration of layers

Is drivers/video/omap2/displays/

Kconfig Makefile panel-acx565akm.c panel-sharp-lq043t1dg01.c panel-taal.c
panel-tpo-td043mtea1.c panel-generic.c panel-sharp-ls037v7dw01.c
panel-toppoly-tdo35s.c

Is -I drivers/video/omap2/dss/

Kconfig Makefile core.c disp.c display.c dpi.c dsi.c dss.c dss.h
manager.c overlay.c rfb.c sdi.c venc.c

Is -I drivers/video/omap2/omapfb/

Kconfig Makefile omapfb-ioctl.c omapfb-main.c omapfb-sysfs.c omapfb.h

Is -I drivers/media/video/omap/

Kconfig Makefile omap_vout.c omap_voutdef.h omap_voutlib.c omap_voutlib.h

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Available SYSFS Interfaces

ls /sys/devices/platform/omapdss/

bus	display1	driver	manager1	overlay0	overlay2				
Subsystem	display0		display2		manager0	modalias	overlay1	power	
	uevent								

ls /sys/devices/platform/omapdss/overlayX/

enabled	input_size	name	position
global_alpha	manager	output_size	screen_width

ls /sys/devices/platform/omapdss/displayX/

bus	mirror	rotate	timings	wssdriver	name	subsystem
Uevent	enabled	power	tear_elim	update_mode		

ls /sys/devices/platform/omapdss/managerX/

alpha_blending_enabled	name	trans_key_value	default_color
trans_key_enabled	display	trans_key_type	

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