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OMAP Android Integration

July 1st 2011

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Android Presentation Plan

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- Android with OMAP
- Android Development Process
- Android Integration and Open source
- Android Product Differentiation
- Honeycomb challenges to meet tablet base devices
- Honeycomb example: Android camcorder data flow

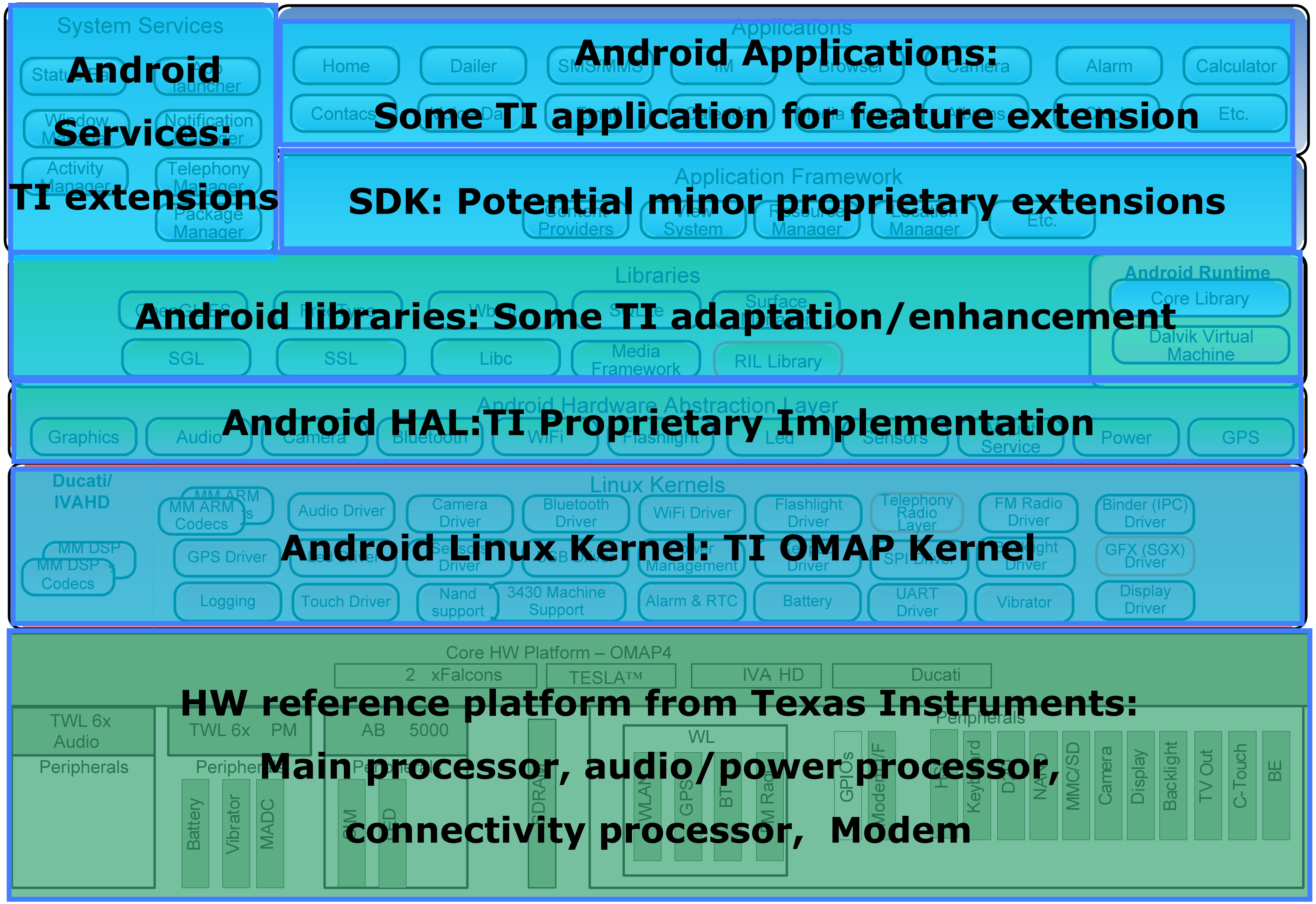
Android with OMAP

- **Proven monthly release and validation process since Android s**
- Software **leveraged** from OMAP Linux community of over 19,000
- **Surface Flinger** gfx and DSS acceleration for enhanced UI and gaming
- Introduction of **720p video** record and playback on Donut and Éclair
- Full **1080 playback and record** on Gingerbread
- **Extended APIs** to utilize full ISP Digital Camera Functionality
- **Aggressive Power Management** providing 30-40% core savings over Android
  - TI Framework adds DVFS, system-wise suspend/resume, CORE OFF and many other features
- **External display** for HDMI and pico-Projection on Gingerbread
- **Strong relationship** with Google to support new, differentiating products
- **Integrated connectivity** with TI BT, WLAN, FM, GPS combo devices

... and much more

- **SMP**
- **Multiple display**
- **3D stereoscopy**

Android Development Process



Android Integration /Open Source

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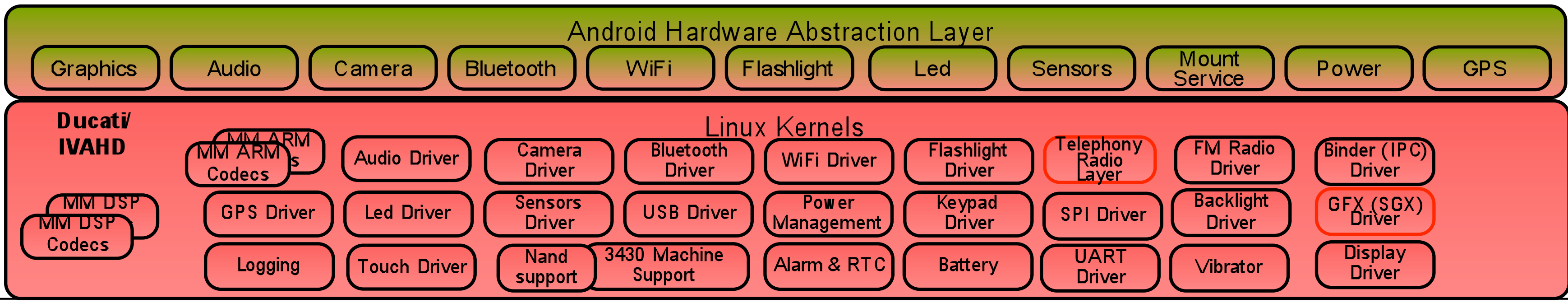
- Linux Kernel integration on HW platform:
  - Enable low level HW capability: device driver integration
  - Objective: Abstract HW capability with robustness

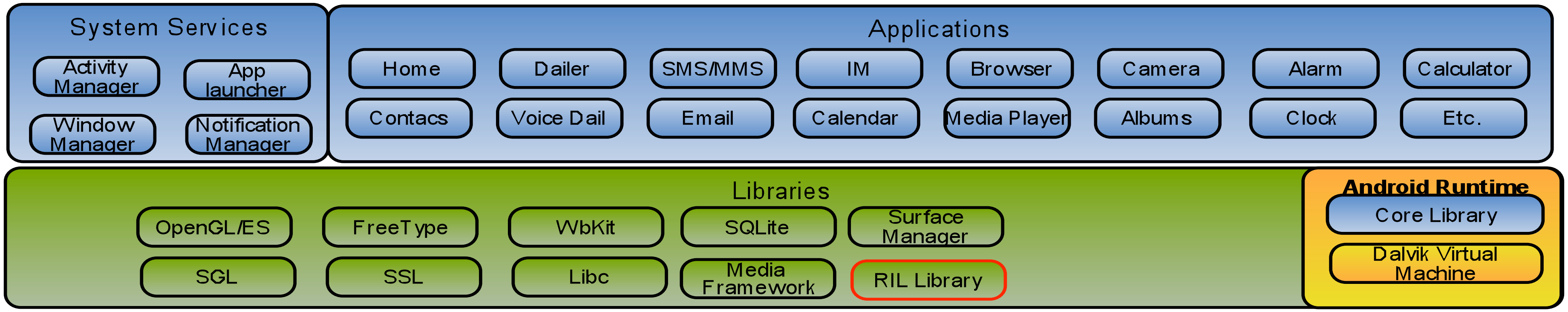
- Android user-space HW dependent integration
  - Integration of HW system acceleration into Android framework: Audio, camera, video, sensor, inputs, GPS, etc.
  - Challenges:
    - Android HAL evolving over the time
    - Android HAL is not supporting all TI HW capabilities requesting custom extensions



Android Differentiation

- Android Libraries enhancements
  - Enhance Android frameworks capabilities
  - Objective: Extend Android framework capabilities for power,

- Android Application and Services enhancements
  - Enable Android feature extension
  - Objective: Provide platform specifics applications (not available into Android market) to leverage extended functionalities
  - Challenges:
    - Interaction between Application and libraries without SDK impact



Android Tablet vs Smartphone

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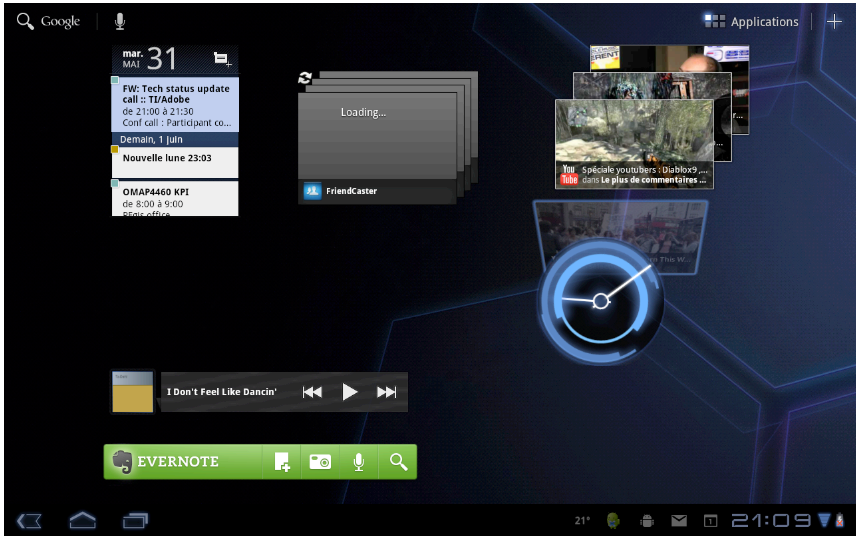
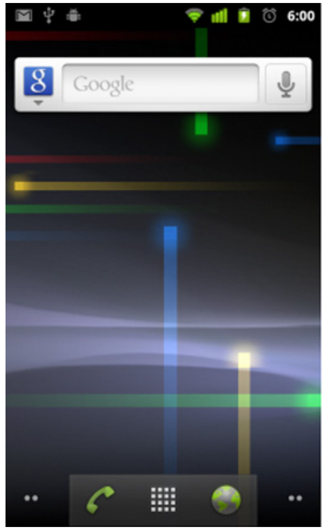
Honeycomb



Gingerbread



- **New Android UI:**
  - Widgets with 3D effects
  - Several layers: status bar, widgets, background, notification, etc.

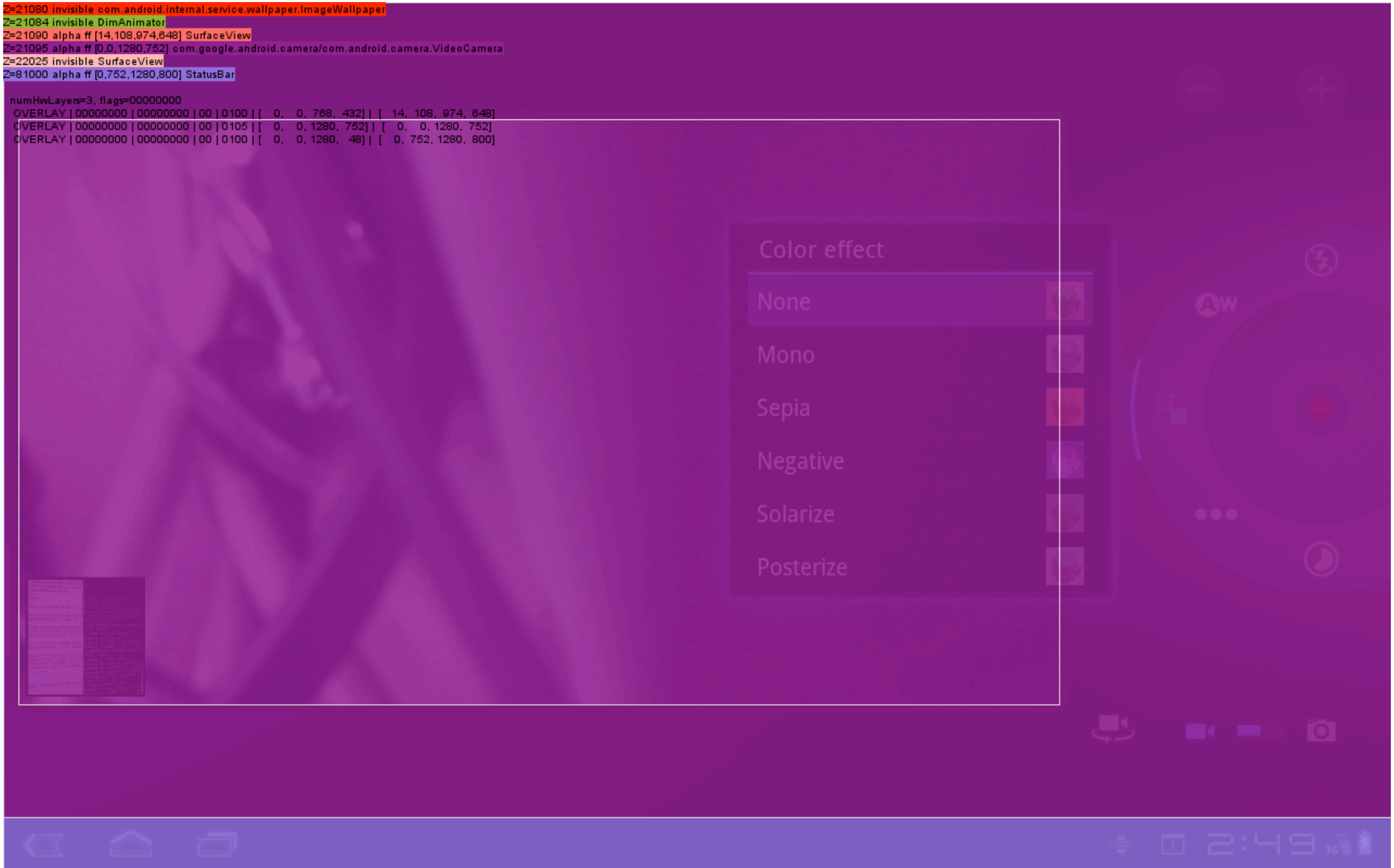
  ➔ *Increase composition and rendering complexity requesting deeper usage of accelerator like DSS and GPU*

- **Larger LCD resolution: WXVGA (1280x800) vs WVGA (848x480)**
  - Double the number of pixel to process

  ➔ *Increase overall processing and memory consumption and throughput*

Android Camera App Example

Android camcorder – 1080P encode



Android Camera App Example
Use-case composition description

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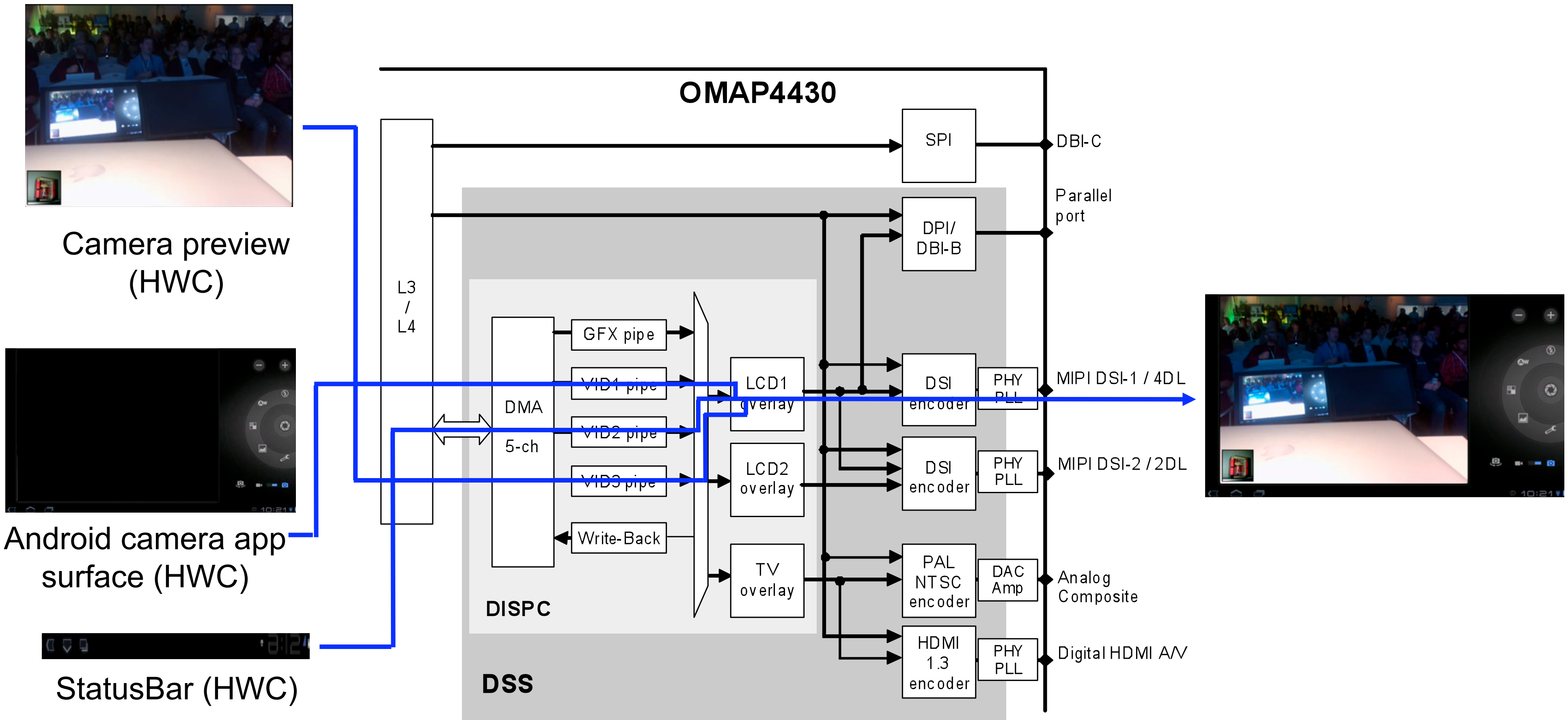

The video frames as well as the 2 Android surfaces (Android camera app surface and Status bar) composed by the DSS

Android Camera App Example Data Flow Diagram