



*Aricent delivers unmatched performance while accelerating time to market by 50%*

## Accelerated Android Based Product Development for a Leading Tier 1 Chipset Vendor

### Customer Profile

The customer is a leading silicon chip manufacturer based in the United States. The company produces broadband communication chipsets that drive various core sub-systems in high-speed networks. In addition, the company's Integrated Circuits (IC) are embedded in a variety of CE device categories: digital set-top boxes, cable modems, servers, and networking gear for home and offices. The customer also offers ICs for carrier access, DSL and wireless communications equipment, including mobile phones.

### Customer Challenges

- Offer enhanced multimedia experiences to end users, on the Android platform
- Accelerate time-to-market of new chipsets specifically targeted at Android based consumer devices
- Deliver unmatched performance for audio and video capabilities

### Solution

As part of the engagement Aricent:

- Provided systems integration services for multimedia CODECs (audio and video) with the Android OpenCORE framework
- Integrated several hardware drivers for video encoder/decoder on the target silicon platform
- Provided a highly automated testing framework for the target platform

### Results

- Aricent's automated testing framework for CODECs reduced testing time by 50%, from 4 to 2 weeks
- The Video CODECs optimized by Aricent reached standalone performance speed of 37-40 fps for video decoding and encoding, and was comparable to performance on the existing Nucleus based platform
- Aricent's optimized CODECs reduced the CPU Utilization for video decoding to 7% and for audio decoding to 9.2%, resulting in more computation capacity for the customer platform

*Delivered unmatched performance through better CPU utilization (reduced 7% for video decoding, 9.2% for audio decoding)*

### Why Aricent?

With its deep domain expertise in multimedia and Android platform development, Aricent was able to provide a complete system integration solution in the form of services ranging across multiple domains – baseporting, hardware configuration layer integration, device driver integration, multimedia middleware components integration and applications integration.

Additionally, with its highly regarded Media EXP Suite of software frameworks, Aricent was able to demonstrate a low frame dropout rate and higher frames per second speed, with optimal audio and video synchronization. And finally, Aricent's proven capability in quickly scaling engineering resources on demand, and its deeply entrenched relationships with other ecosystem vendors proved to be a compelling argument.

## Customer Challenges

The customer's primary challenge was to develop a low cost, high performance, integrated silicon platform optimized for Android that could be used for various multimedia device form factors like HMP, PMP, Set-top boxes, etc. This would allow OEMs to offer a wide variety of devices to end users, all based on a single platform.

Secondly, the customer was looking to integrate the highly optimized multimedia CODECs in a way that would leverage advances in the hardware platform and showcase their capabilities to the fullest (higher frame per second, better audio/video synchronization, advanced sound effects etc.). With the new wave of Android related devices planned by various OEMs, it was very important to accelerate time-to-market for new chipsets to align with the launch schedule of OEM devices.

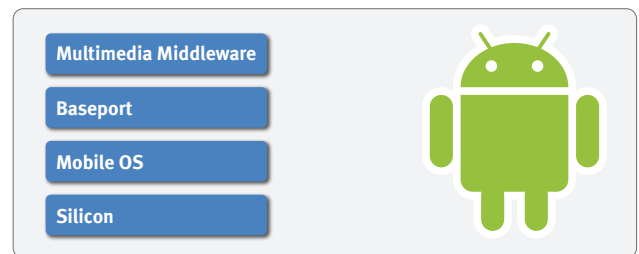
## Aricent Solution

Aricent provided a comprehensive solution that included baseport development, device driver integration, hardware video encoder/ decoder driver integration and integration of optimized multimedia CODECs into the target chipsets, based on the Android OpenCore architecture.

The diagram below shows Aricent's integration services that span the various OS layers.

Key aspects of the solution included:

- Integration of multiple hardware drivers for video
- Integration of the MPEG-4 video encoder and MPEG-4 video decoder, both with hardware acceleration, with the Android OpenCORE framework
- Integrating the AAC-LC audio decoder (with optimized assembly codes) with the Android OpenCORE framework



## Results

The SLA mandated by the customer was that the performance of the integrated CODECs on Android should be comparable to the performance on the existing Nucleus platform.

Video CODECs (H.263, H.264 and MPEG4) optimized by Aricent reached a benchmark standalone performance speed of 37-40 fps for video decoding and encoding. CPU utilization was reduced to 7% for video decoding, and 9.2% for audio decoding, resulting in higher computation capacity for the customer platform.

Consequently, the Aricent solution achieved performance comparable to CODECs running on a Nucleus platform. Taking advantage of the reduced CPU utilization and higher encoding and decoding speeds, the customer was able to provide significantly superior multimedia access and sound effects to the end users.

*Improved time to market through 50% reduction in the testing time*

Aricent's automated testing framework reduced time spent on testing by 50%, from 4 to 2 weeks, and thus accelerated time to market.

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