

EXHIBIT 23

- [Symphony System Manager SDK](#)
 - [ProfilersExpand](#)
 - [Adreno GPU Profiler](#)
 - [App Tune-up Kit](#)
 - [Snapdragon Profiler](#)
 - [Trepn Power Profiler](#)
- [HardwareExpand](#)
 - [Wi-Fi Connectivity for IoTExpand](#)
 - [QCA9377-3](#)
 - [QCA4010/12](#)
 - [QCA4002/4](#)
 - [RoboticsExpand](#)
 - [FIRST Robotics](#)
 - [Snapdragon Flight](#)
 - [Snapdragon Micro Rover](#)
 - [Snapdragon for EmbeddedExpand](#)
 - [Which Processor is Right for You?](#)
 - [Snapdragon 600E Processor](#)
 - [DragonBoard 410c Development Board](#)
 - [Snapdragon 410E Processor](#)
 - [Additional Snapdragon Boards](#)
 - [Bluetooth Connectivity for IoTExpand](#)
 - [Which BLE Solution is Right for You?](#)
 - [CSR102x Product Family](#)
 - [CSR101x Product Family](#)
 - [BlueCore CSRB534x Product Family](#)
 - [Additional SolutionsExpand](#)
 - [2net mHealth Platform](#)
 - [Snapdragon 835 VR Development Kit](#)
 - [Mobile Hardware Dev KitsExpand](#)
 - [Snapdragon 835 Mobile Hardware Development Kit](#)
 - [Snapdragon 660 Mobile Hardware Development Kit](#)
- [DownloadsExpand](#)
 - [Software Development](#)
 - [Hardware Development](#)
- [ForumsExpand](#)
 - [Software Development](#)
 - [Hardware Development](#)
- [CommunityExpand](#)
 - [Projects](#)

1/2/2018

- [Blogs](#)
- [Get Noticed](#)
- [Stay Informed](#)
- [Follow Us](#)
- [Other Support](#)
- About Us [Expand](#)
 - [About Us](#)
 - [Events](#)
 - [Stay Informed](#)
 - [Contact Us](#)

1. [Home](#)

2. How to Use FastRPC to Offload from CPU to Qualcomm® Hexagon™ DSP

How to Use FastRPC to Offload from CPU to Qualcomm® Hexagon™ DSP

Thursday 7/23/15 01:00pm

Posted By Jack May

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What do drones, robots and cameras have in common?

They can all take advantage of the DSP for higher performance in real-time tasks. In drones, that means flight control; in walking; and in cameras, it means image pre- and post-processing. Offloading real-time tasks from the CPU to the DSP provides higher performance, with the sweetener of much lower power consumption.

How To Use Hexagon™ DSP And FastRPC

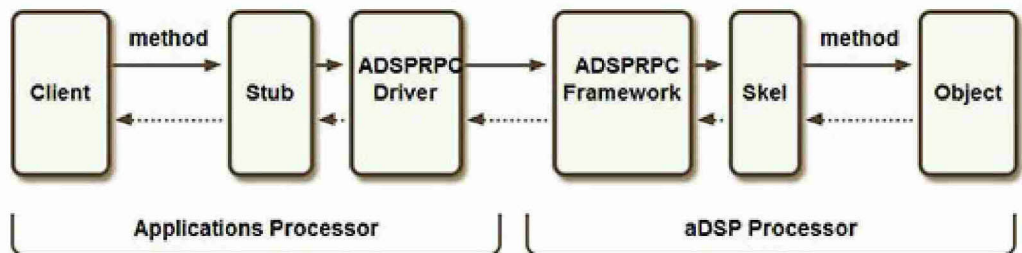
Our [Hexagon SDK](#) exposes FastRPC, a remote procedure call framework allowing clients to transparently make remote calls to the Qualcomm® Snapdragon™ processor (APPS) and the application DSP (aDSP). It's available now on the Snapdragon [DragonBoard 800](#), a product of Intrinsic Technologies Corporation, as well as the 8084 and 8994.

FastRPC is designed around several features that make offloading tasks as easy as possible:

- Initiating the remote invocation looks the same as if you called it locally, you provide the function definition via IDL (Language)

- For FastRPC calls into dynamic modules the framework loads the aDSP module for you.
- FastRPC is synchronous. That eliminates the complexity of having the kernel manage state between aDSP and APPS.

The diagram shows the invocation of a single method in which the client resides on APPS (e.g., Snapdragon CPU) and the object resides on the aDSP (e.g., Hexagon). The stub and skel are auto-generated, you only need to call the function from the applications processor to invoke the implementation of that function on the aDSP.



On an Android device that supports FastRPC, these are the steps to get your job offloaded to the aDSP.

1. Download and install the Hexagon SDK.
2. Describe your job's API in IDL (Interface Description Language).
3. Auto generate your header, and the stub and skel libraries.
4. Implement your API on the DSP, link it and the skel library into a shared object, push the shared object to the device.
5. Link the stub to your android native app and call your API.
6. (Optional) Create java bindings for your API and call you API from an APK.

That's it.

A Drone Developer Kit?

Not exactly.

But we're seeing developers take the Snapdragon processor in that direction, and the Hexagon DSP goes with it. You can do more than just multimedia, so dig in and find out for yourself.

If you're a drone or robotics developer looking for faster execution of real-time tasks with lower power consumption, [app SDK](#). It includes full documentation and code samples for invoking FastRPC.

And stay tuned for more how-to's and use cases involving Hexagon.

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