

[Skip to posts](#)

- [About](#)

Collaborative Advantage

Just another Chip Design Blog

Search here...

Find

- [Home](#)
- [Uncategorized](#)

Vertical Challenges: Open3D And The Grand Canyon

July 20, 2011 [Steve](#) [1 comment](#)



Summer is a time for relaxing and recharging, at least for a bit. I took some time off (despite numerous comments about not updating my blog) to enjoy time off with family and good friends. This included an exciting trip, with a week of white-water rafting 87 miles through the Grand Canyon. One look above us at the nearly mile-high side walls of tiered rock and sandstone layers, as seen from the depths of the Colorado River below, gave new meaning to silicon stacking and vertical trenches!

We put in at Lees Ferry (near Marble Canyon, AZ) in a 4-passenger oar-driven raft and supplies for 6 days of food. Drinking water is generated with a solar panel to charge a battery that runs the 50 degree river water through several filters. The rapids ranged from class 3 up to class 5, and the rapidly melting ice water from Lake Powell moved the water at a brisk 26,000 cubic feet / second. We stopped for special sightseeing hikes several times per day, and camped under the stars. One time we had to swim through icy water, then algae-laden stagnant pools, climbing up a rope 30 feet, then wading through more muck to reach “The Silver Grotto”. We hiked up and down the mountain side to reach a “sideways waterfall” where we could swim and relax. Another time we hiked to the Little Colorado River, with surreal bright turquoise blue water (the product of calcium carbonate and copper sulfate minerals in the water); we were allowed to jump in to be carried away through its rapids.

Food was surprisingly good, as our guides prepared everything from steaks to cakes using LP gas. As we traversed downstream, the water’s altitude kept dropping at the same time as the walls of the Grand Canyon stretched up ever higher, until we reached our destination at Grand Canyon Village 6 days later. At that point, the water-to-peak height approaches one mile. After hiking our duffel bags to the mules at Phantom Ranch, we then began the 7.8-mile vertical hike to the top about 7:15am, reaching the top around 12:45 in the 100-degree AZ heat. Quite an adventure!

Along the way, I was amazed at the variety of rock formations clearly visible in the (mostly) horizontal layers

dating back 1.8 billion years. Sometimes, violent forces from heat build up would literally melt and bend the rock layers from horizontal into a nearly vertical orientation. We sure wouldn't want that to happen to stacked silicon dies, would we?



All Grand Canyon metaphors aside, our industry is indeed preparing to “go vertical” with mainstream production capability of 2.5 and 3D stacked die utilizing Through-Silicon-Vias (TSVs), and part of that is setting up the common infrastructure required, including design data standards. After a successful kickoff meeting at DAC last month, industry experts are now joining the “Open3D” TAB under the auspices of Si2. Every part of the semiconductor and EDA / IP

supply chain was represented at the DAC meeting, and there are some pretty aggressive schedules including 1H of 2012. If you are interested in participating in Open3D, please contact Si2 for more details. Si2 is coordinating its Open3D activities with other key consortia, including GSA, SEMATECH, SRC, IMEC, and LETI.

I'll follow up with more meat around Open3D in my next blog... but in the meantime, don't forget to enjoy your summer!

[Uncategorized](#) *none*

[Edit in Admin](#)

Comments

[Leave a comment](#) [Trackback](#)

- Written by [Blog Review: July 20 | System-Level Design](#) about 1 year ago. | [Edit](#)

[...] Steve Schulz does some white-water rafting in the Grand Canyon and thinks about vertical stacking. Our vote [...]

Comment Pages:

Leave a Comment

Logged in as [Steve](#). [Logout](#)

Your comment

[Subscribe to comments](#)

[Leave comment](#)