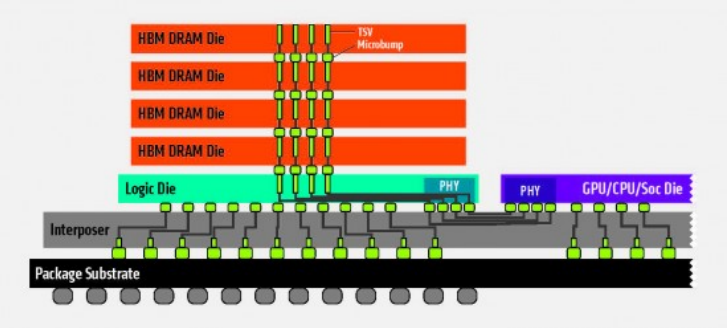
AMD's infographic on HBM

If one company is bad at bragging, then it's AMD. It's two main competitors are a lot better in that - NVIDIA even bragged about their upcoming GPUs having HBM. So I was surprised that recently I encountered a nice infographic, where AMD was actually bragging. And they deserved to do it!

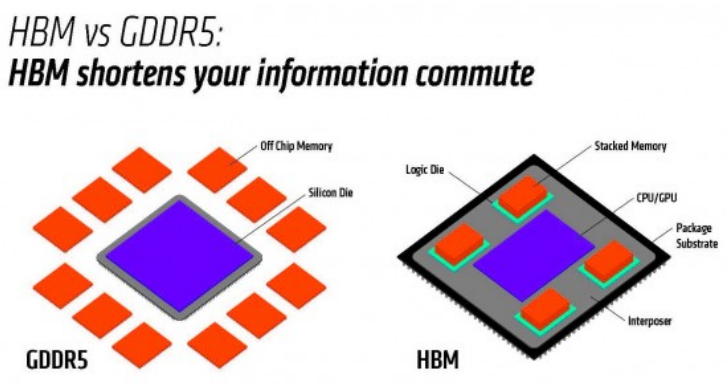
I wanted to have comparisons with Intel/Micron's HBC, but I leave that for another post as the good information is often a year old.

Very close to the processor

It's using a high-speed bus on the substrate.

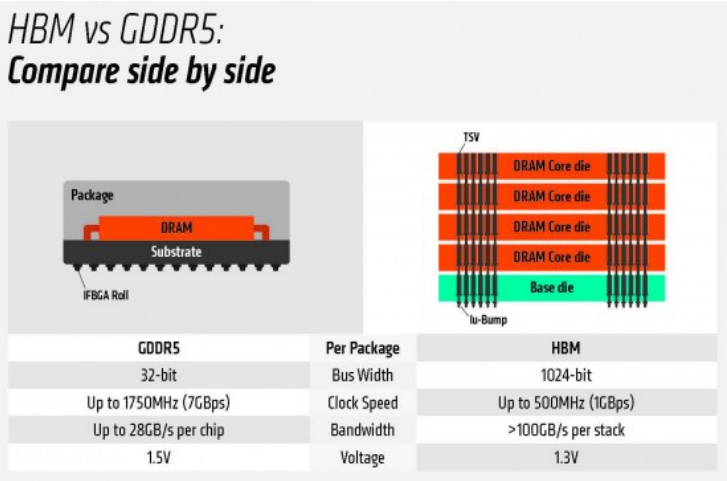


And yes, it really matters to be closer to the processor.



HBM versus GDDR5

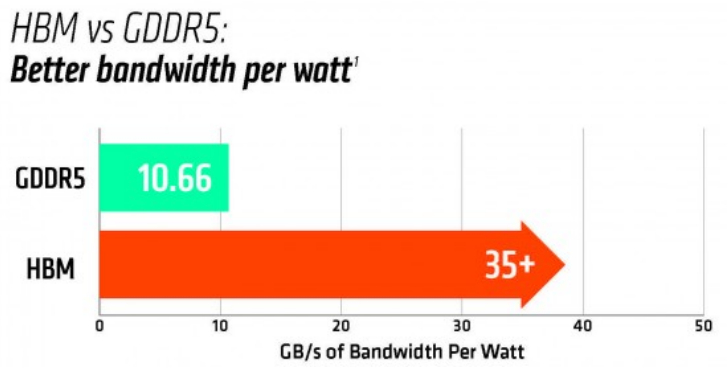
- Bus width from 32-bit tot 1024-bit
- Clockspeed down. We need to wait for how it's calculated.]
- Bandwidth up a lot. We can expect 1TB/s for GPUs now
- Required voltage 14% down, which saves a lot of energy



GDDR5	Per Package	HBM
32-bit	Bus Width	1024-bit
Up to 1750MHz (7GBps)	Clock Speed	Up to 500MHz (1GBps)
Up to 28GB/s per chip	Bandwidth	>100GB/s per stack
1.5V	Voltage	1.3V

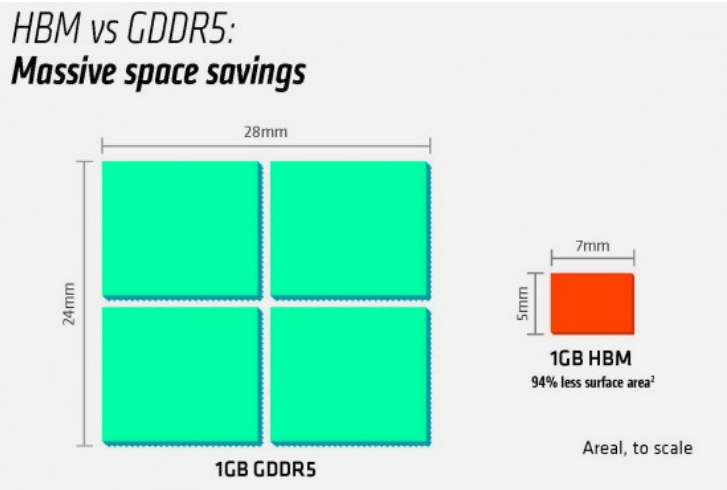
Better GB/s per Watt

So for maintaining 320GB/s you would need 30 Watts. Now you need 9 Watts. As the reduction in power for the Radeon NANO is almost 100W, you understand that this tells only part of the power-reductions made possible.



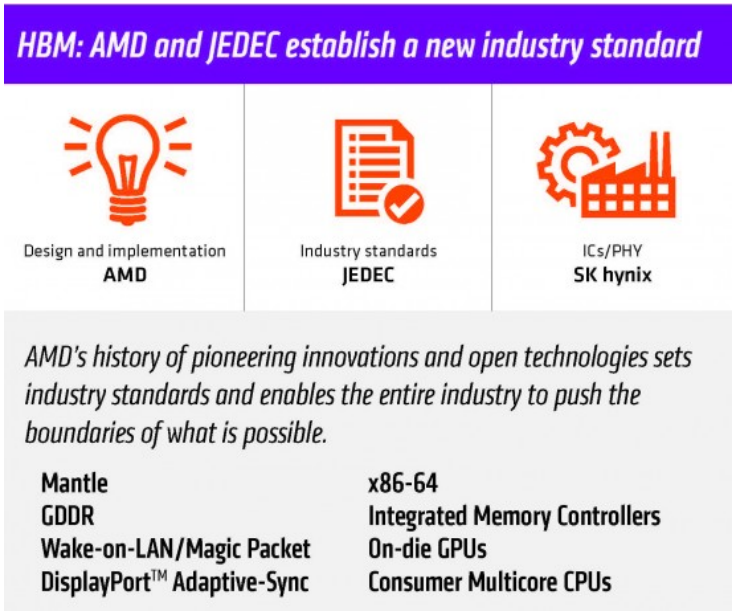
A lot smaller

Yes, 94% less surface area. Only part of the reason is the stacking.



Standards AMD has pioneered

HBM has been engineered and implemented by AMD, made a standard by JEDEC and put into sylicon by Hynix.



And finally some bragging! AMD has made many standards we use daily, but never knew it was AMD technology.

- Mantle. The predecessor of Vulkan, DirectX 12 and more
- GDDR 1 to 5. Now being replaced by HBM, and not GDDR6
- Wake-on-LAN. You never knew! Intel and IBM made it into a standard, but AMD introduced the Magic Packet in 1995.
- DisplayPort Adaptive-Sync. Previously known as FreeSync.
- X86-64. The reason why you find "amd64" packages in Linux.
- Integrated Memory Controllers.
- On-die GPUs.
- Consumer Multicore CPU, the Athlon 62 X2.]
- HSA. Not in the list, probably because it's a recent advancement.

Want to see the full infographic? Click here.