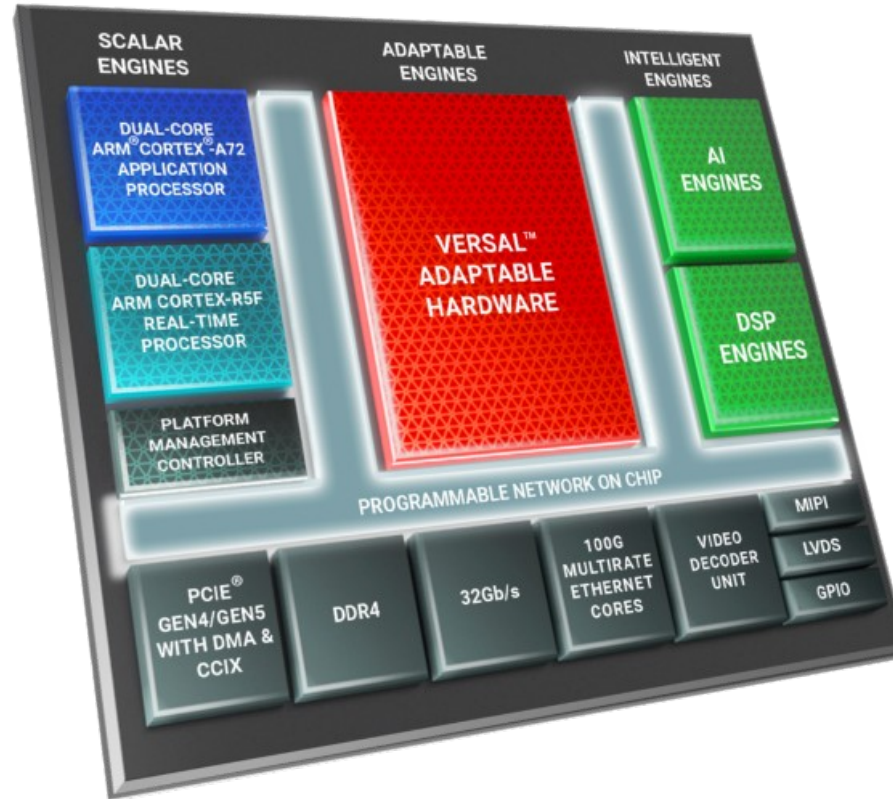


Versal ACAP

Дмитрий Смехов

ЛяЛямбда 2023

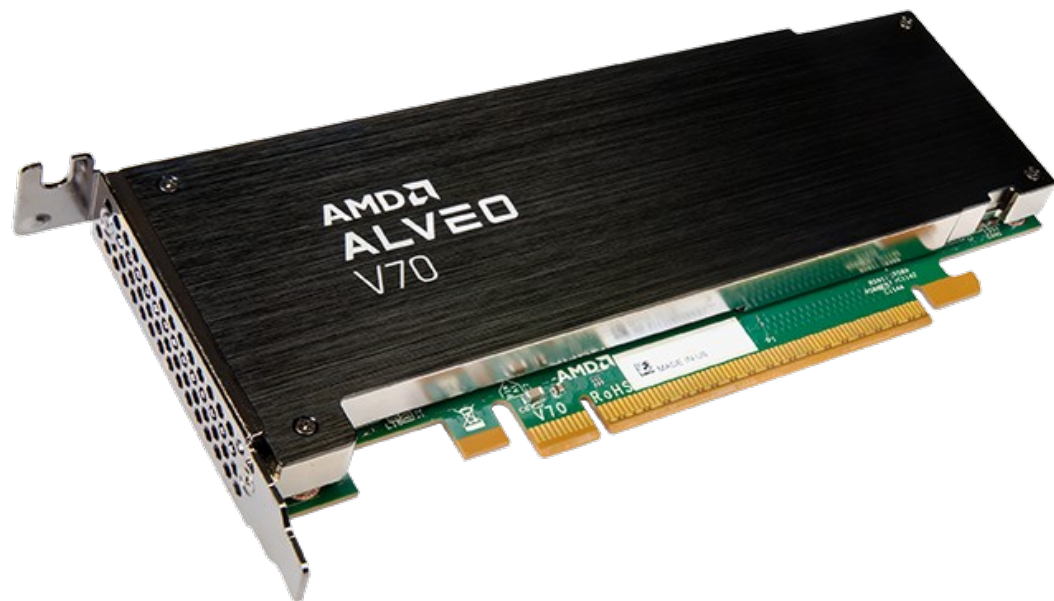
AMD/Xilinx



<https://www.xilinx.com/products/silicon-devices/acap/versal-ai-core.html#productAdvantages>



ALVEO V70

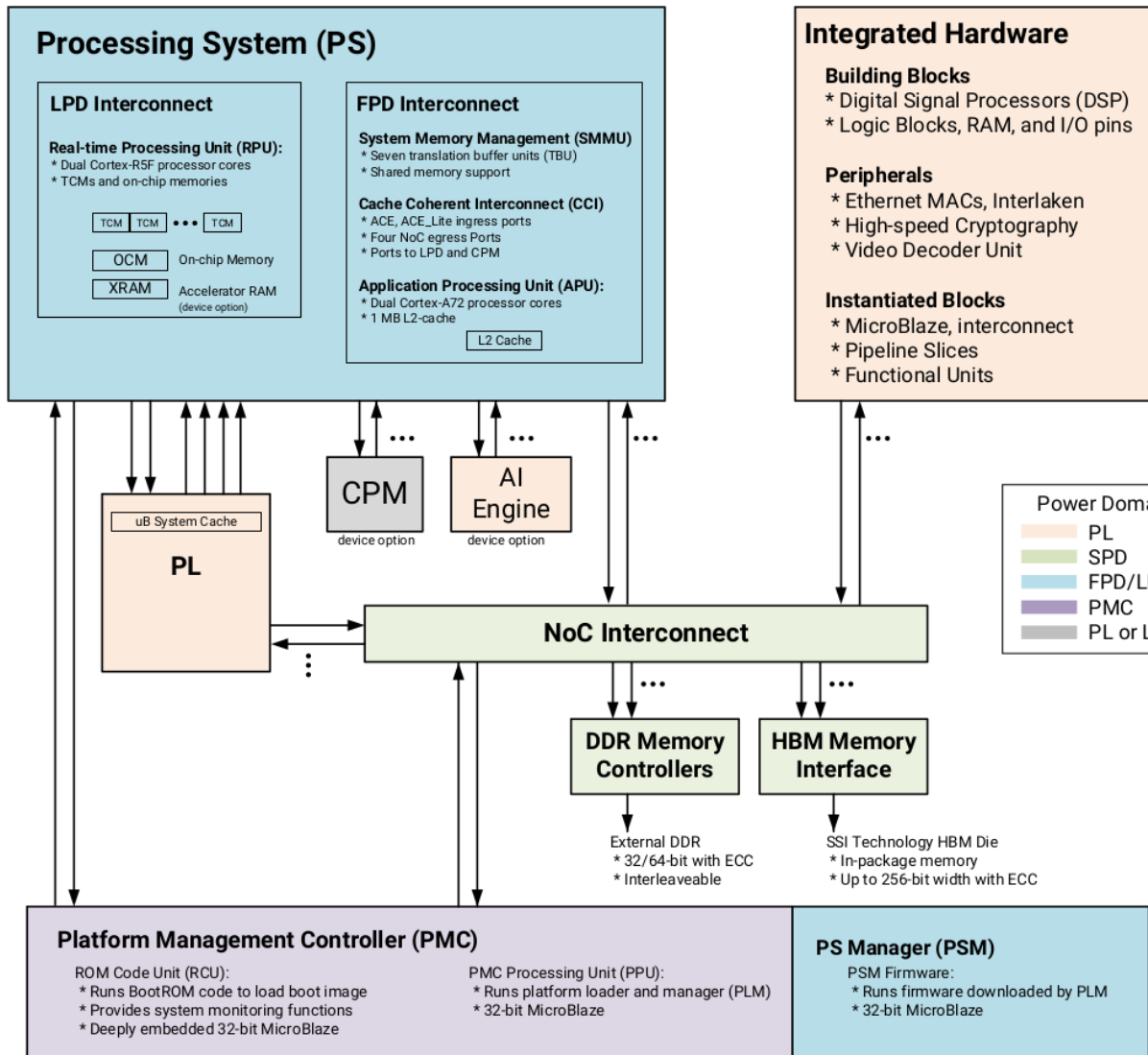


Новый класс:

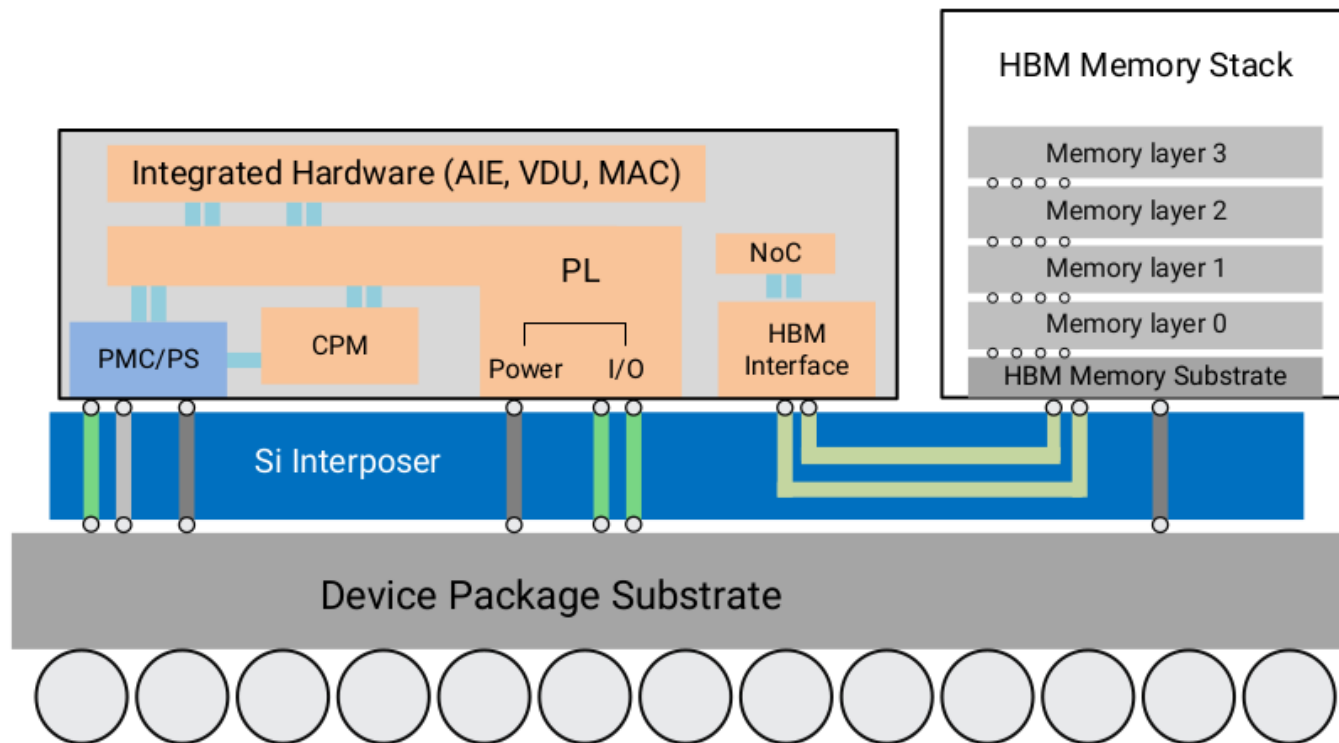
ACAP — Adaptive Compute Acceleration Platform

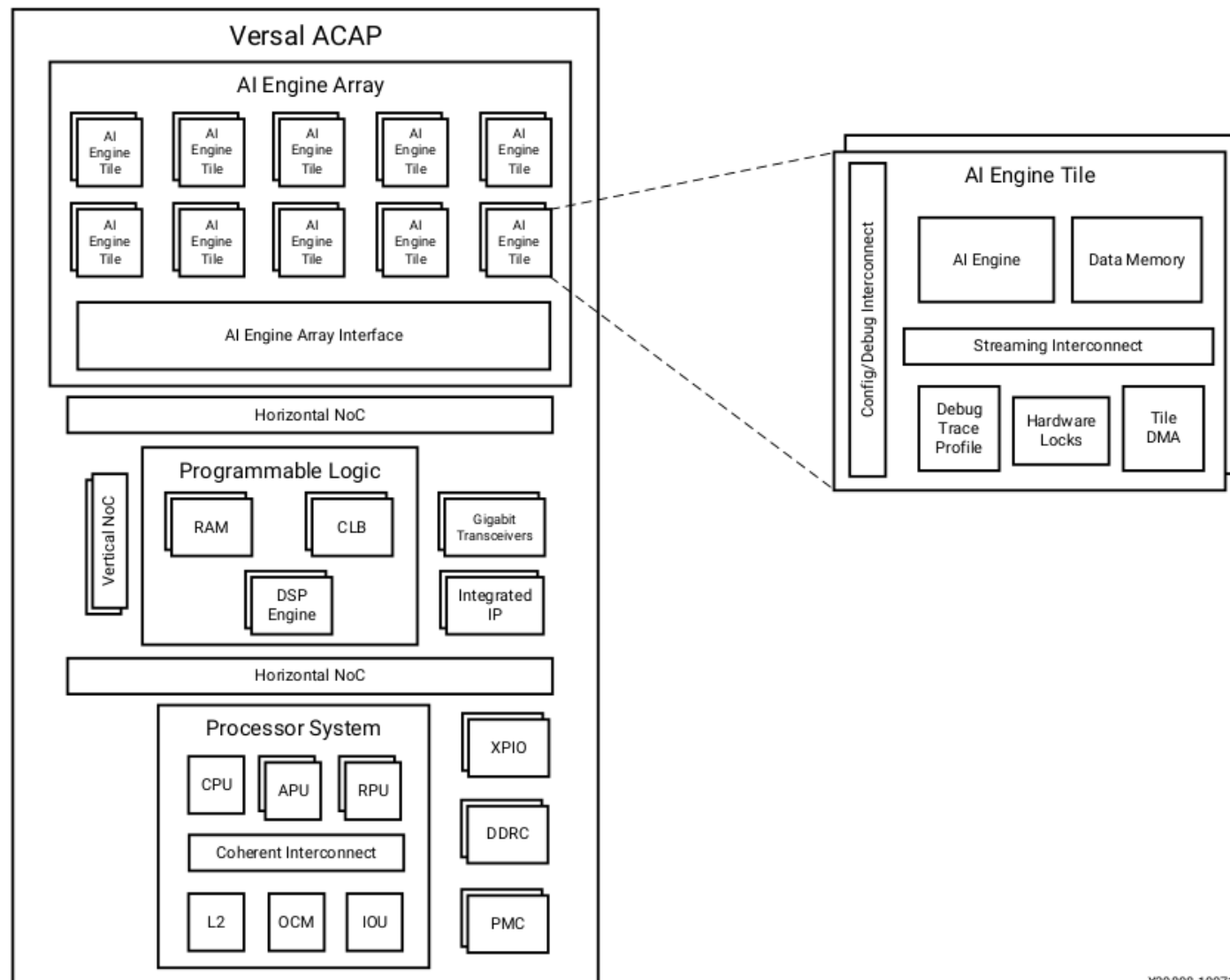
Основные свойства:

- Процессор: Dual-core Cortex-A72, Dual-core Cortex-R5
- FPGA
- **Матрица из 400 процессоров**
- NoC — network on chip
- Контроллеры: PCIe, DDR, MAC

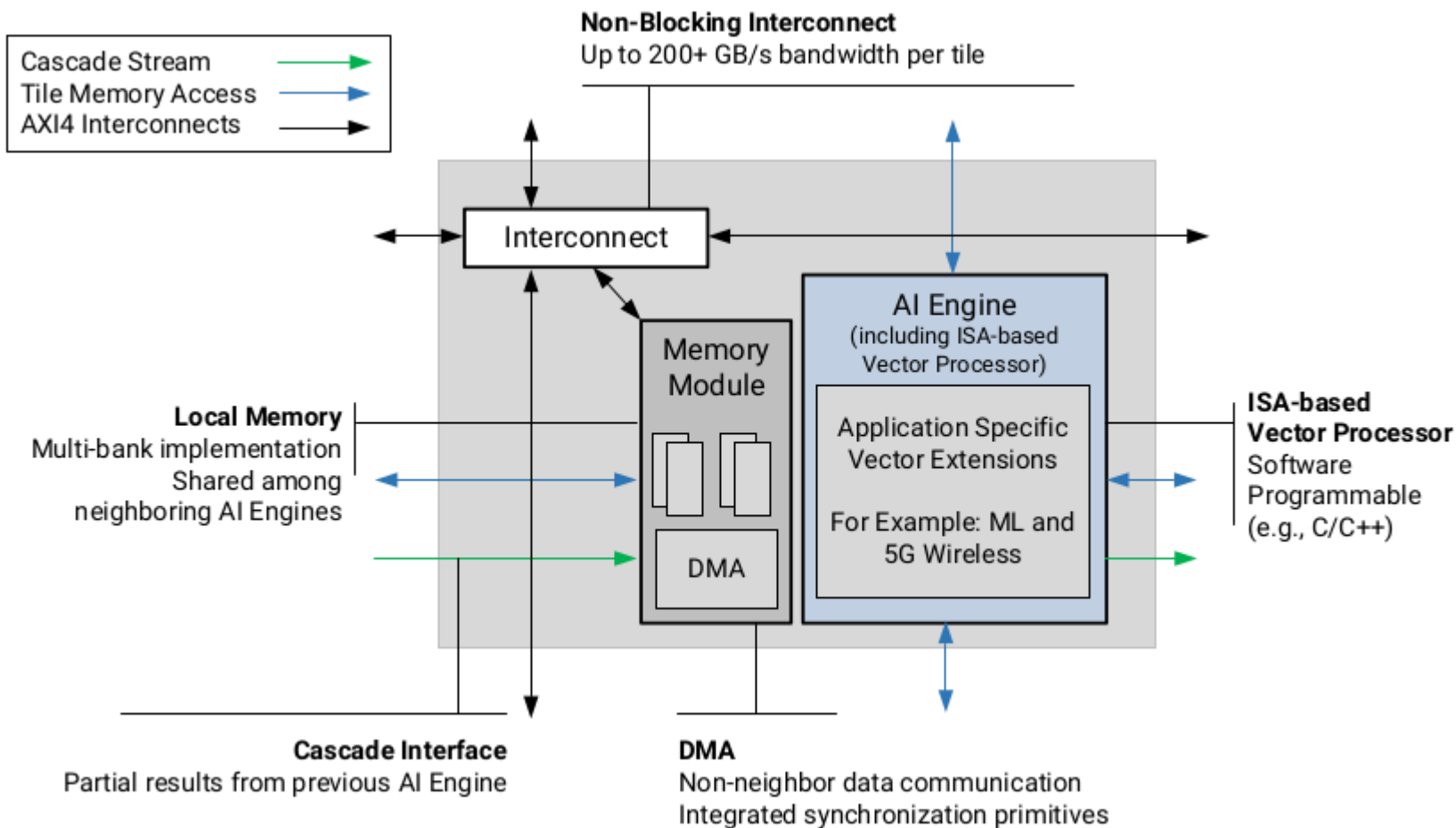


Вид в разрезе

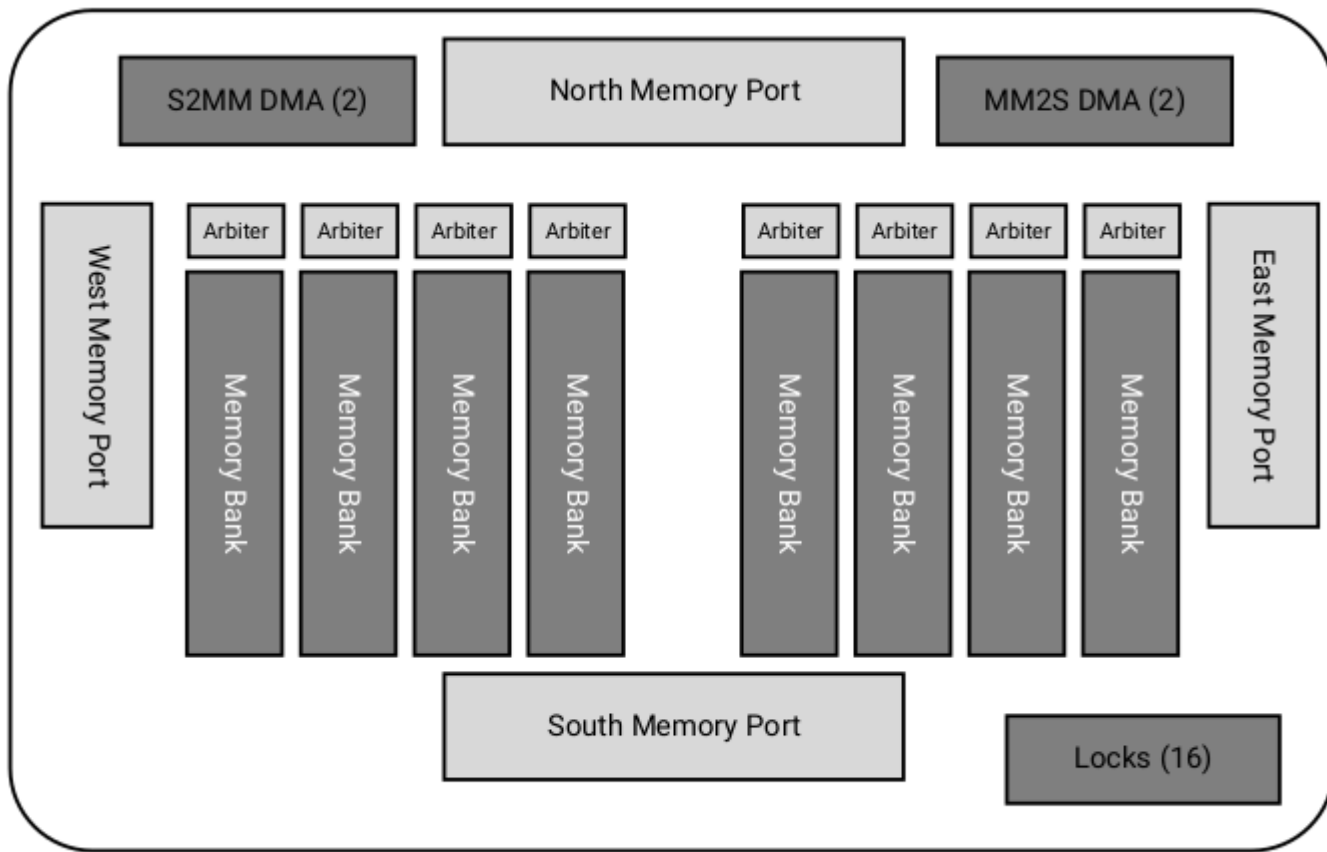




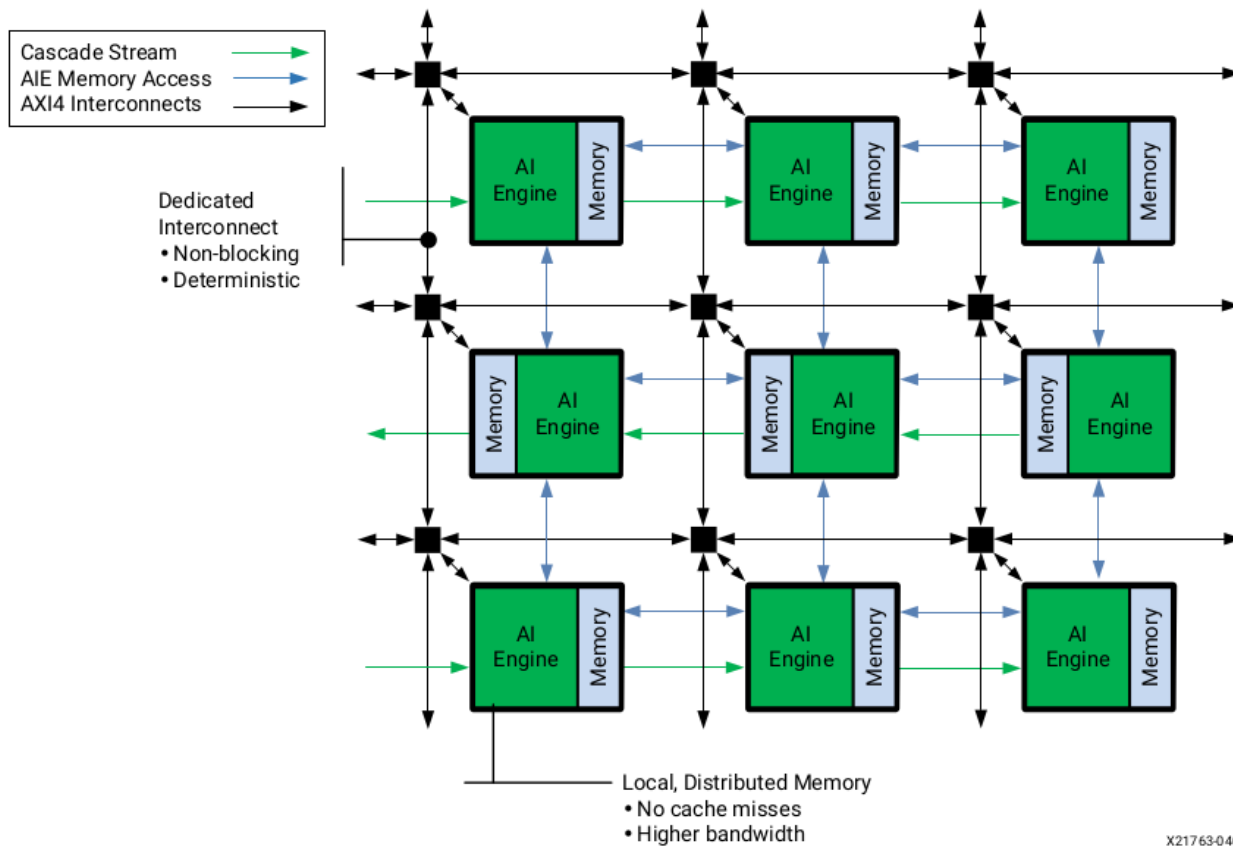
Структура AI Engine Tile



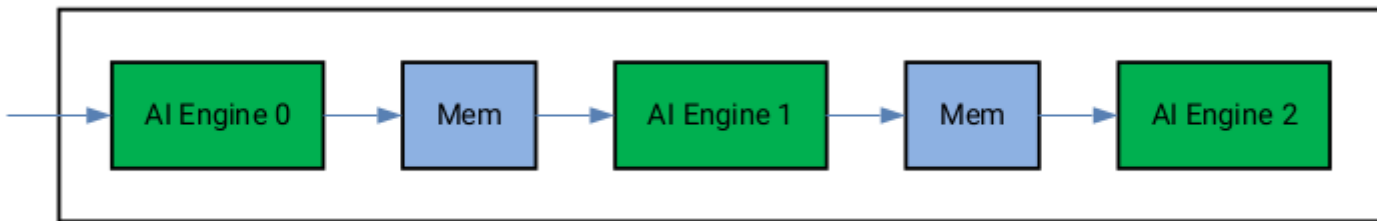
Memory Modules



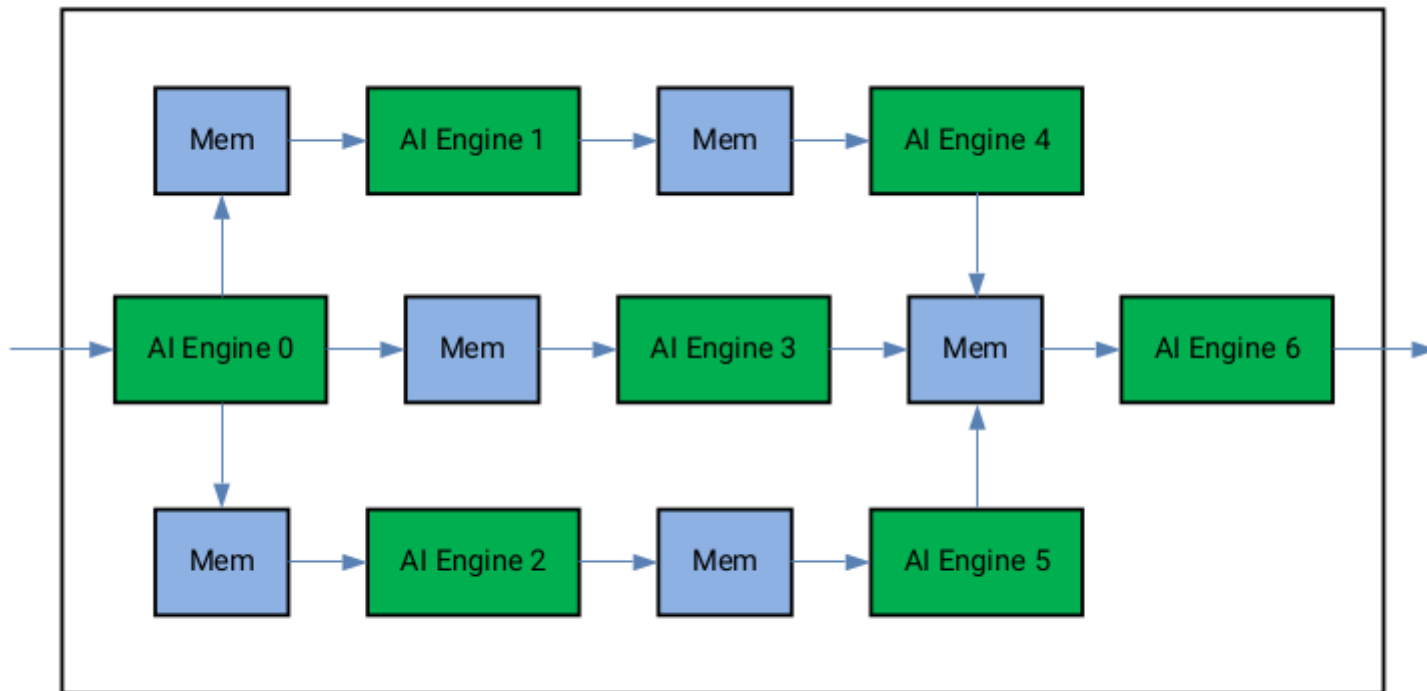
Связь процессоров



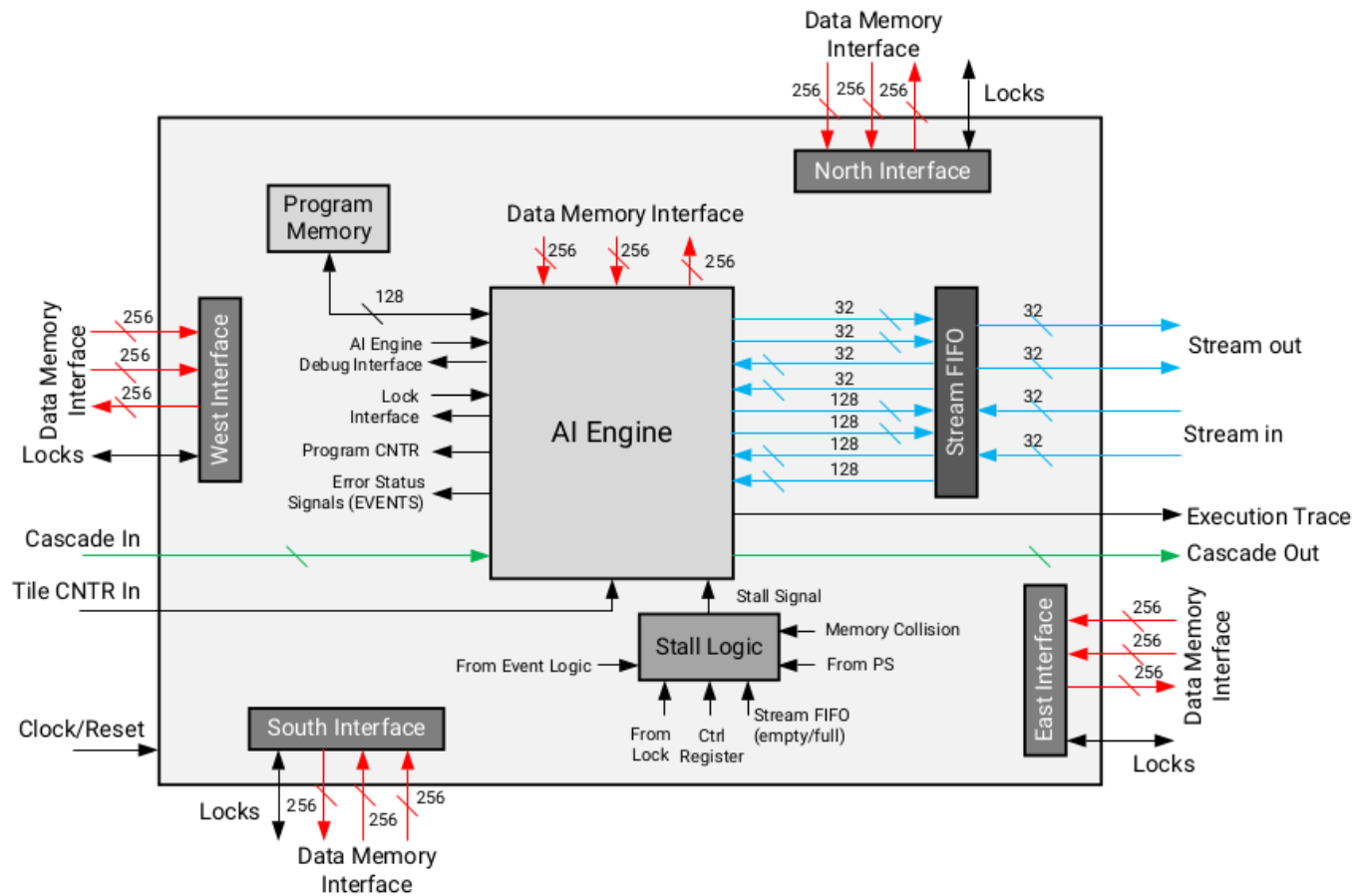
Pipeline



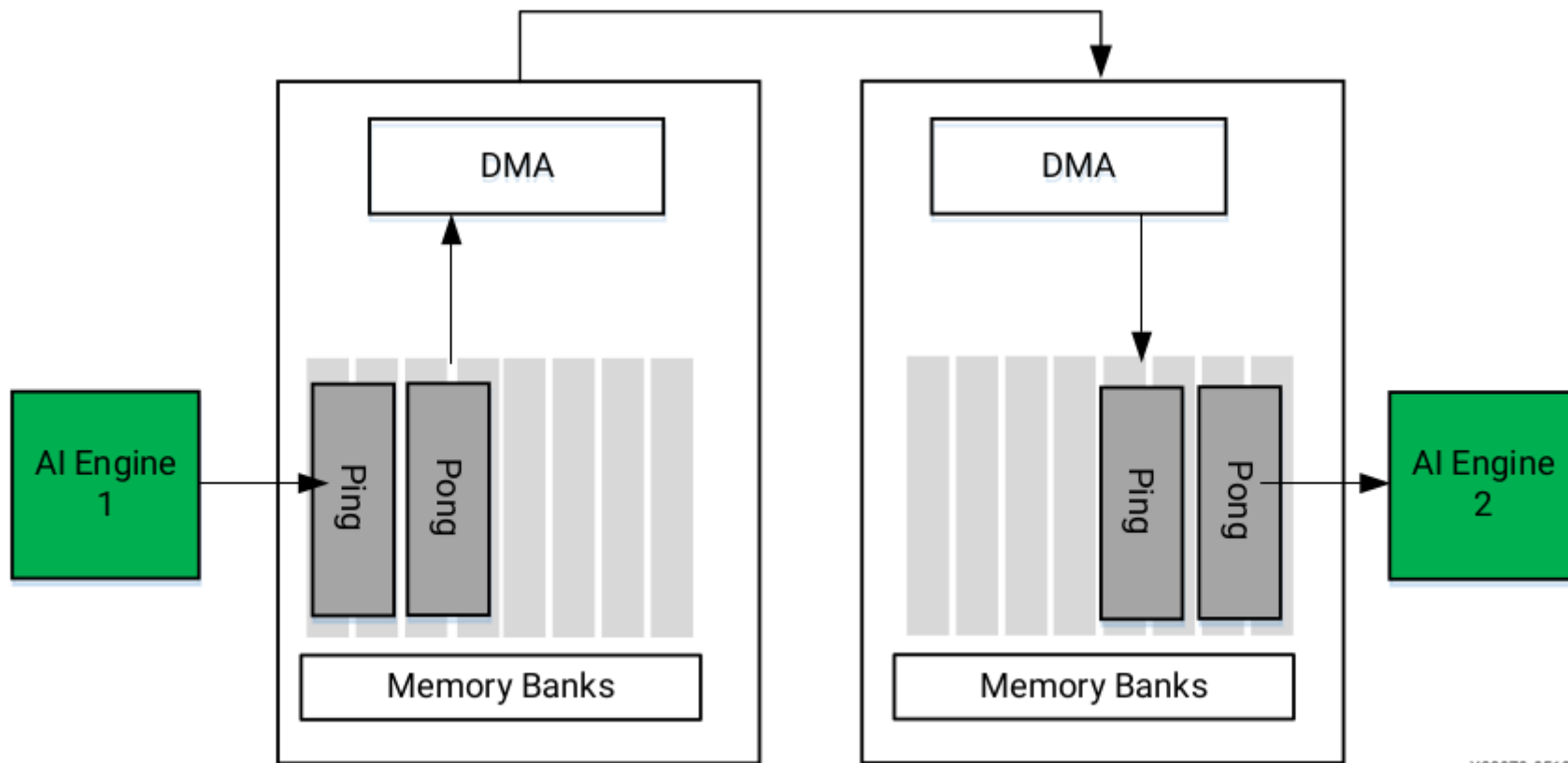
2D-Network

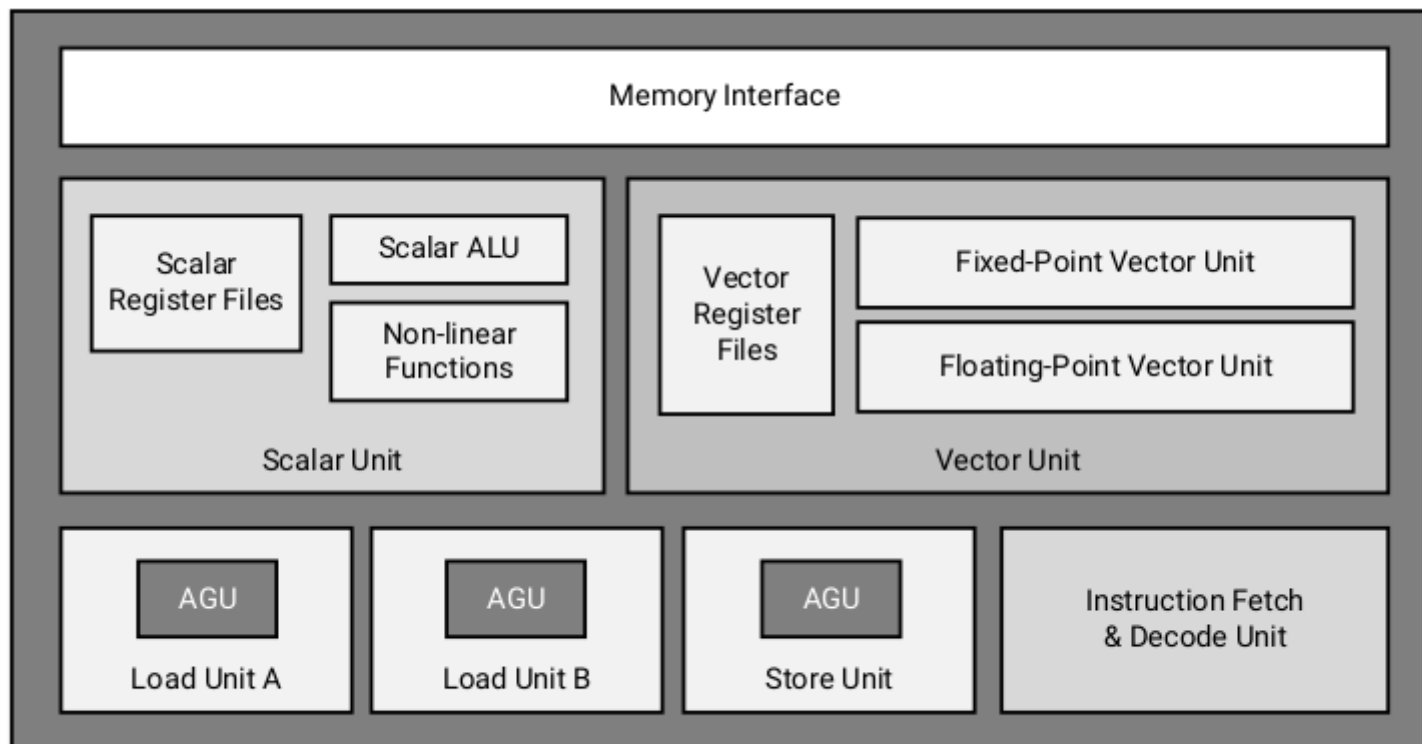


Интерфейсы



Связь между несоседними Tile





Vector register

128-bit	256-bit	512-bit	1024-bit	
vrl0	wr0	xa	ya	N/A
vrh0				
vrl1				
vrh1				
vrl2	wr2	xb		yd (MSBs)
vrh2				
vrl3	wr3			
vrh3				
vcl0	wc0	xc	N/A	N/A
vch0				
vcl1	wc1			
vch1				
vdI0	wd0	xd	N/A	yd (LSBs)
vdh0				
vdI1	wd1			
vdh1				

Accumulator

384-bit	768-bit
aml0	bm0
amh0	
aml1	bm1
amh1	
aml2	bm2
amh2	
aml3	bm3
amh3	

AI Engine Scalar Unit

