Generic ALU based on HCSA adder

HCSA may be used within the different kind of tasks It behaves effective also for processor core parts. For example Generic ALU can be implemented applying HCSA methodology.
Basic idea is every **ALU bit** implemented as a combinational part and performs either logic or arithmetic operations. Since **bit carry/bit stealing** exists only in arithmetic operations (“+” or ”-“) the HCSA method can be also applied for the ALU bit. (for more details see ALU implementation).

Table 2 represents ALU_HCSA (ALU with hierarchical carry save algorithm) implementation details (synthesis process: 0.35u library, worst case military conditions).

Data width	delay (ns)	combinational area (gates)	non-combinational area (gates)
8	4.70	230	235
16	5.66	385	400
32	6.99	800	715