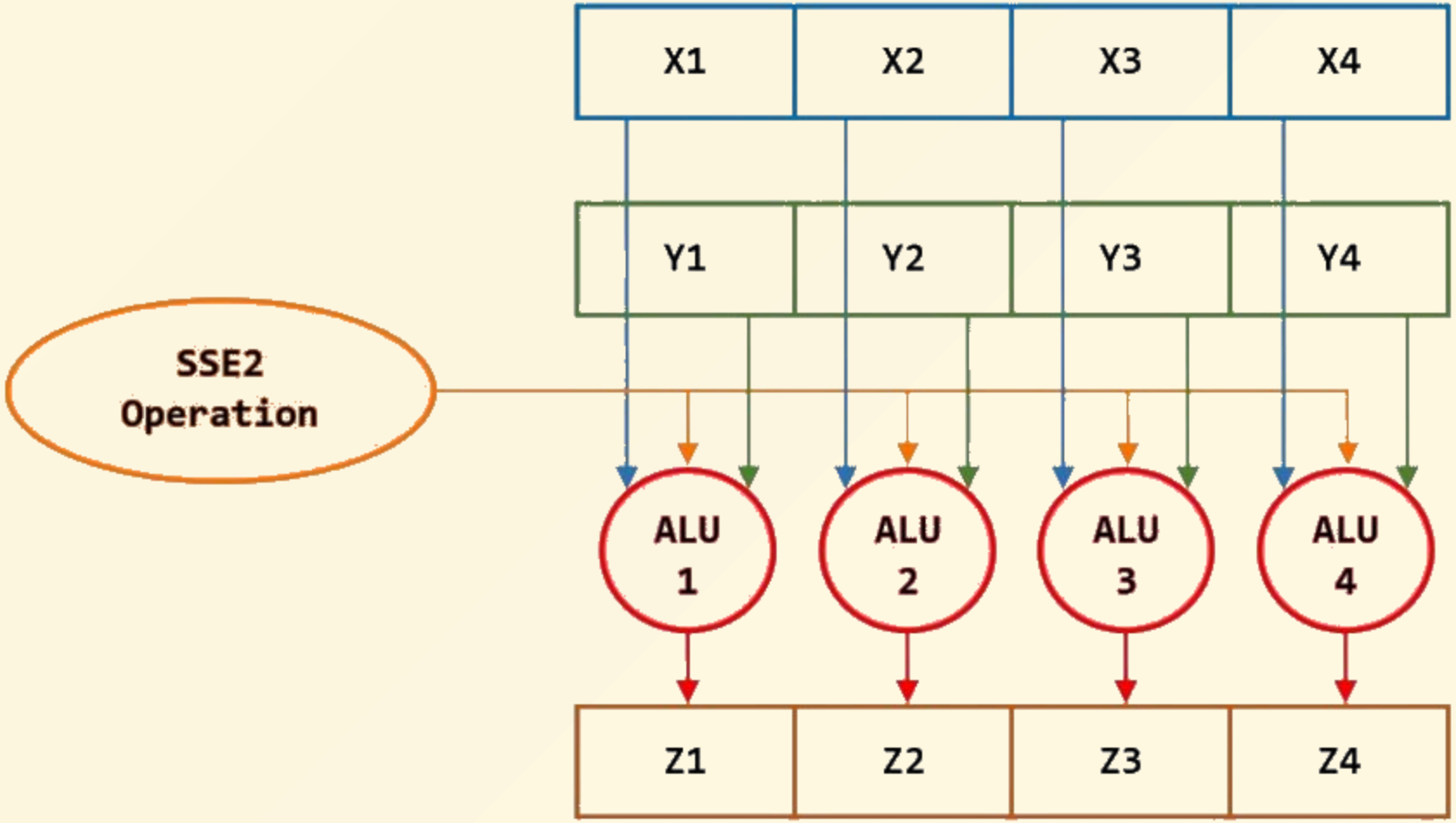
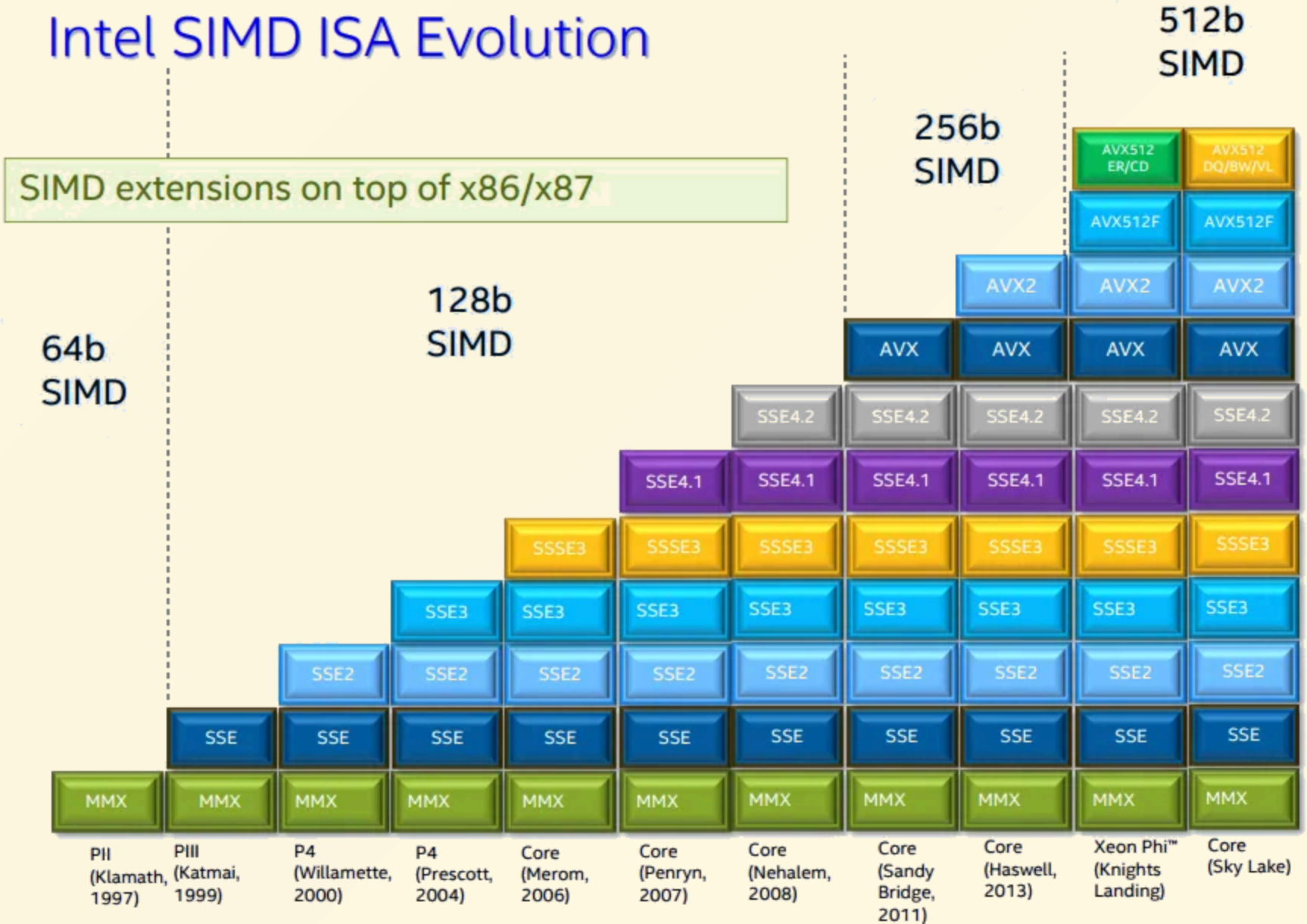
Single Instruction Multiple Data



Intel SIMD ISA Evolution



Registers

	Size	Register
MMX	64-bit	XMM
SSE*	128-bit	XMM
AVX/2	256-bit	YMM
AVX512	512-bit	ZMM

“ AVX512 is disabled with 12th & 13th Gen ”

Support in Rust

stable

- LLVM is doing decent job vectorizing iterators
- `std::arch` provides access to SIMD primitives

> RUSTFLAGS='-C target-cpu=native'
> RUSTFLAGS='-C target-feature=+avx2'

nightly

- `portable_simd` feature provides type Simd<T, N>

When do we need it

- Processing large arrays of data
- But! Usually it is responsibility of compiler

In rare cases it might be used explicitly

- Language is not expressive enough for engineer to communicate abstractions
- Allows for faster processing and cost saving

> Danger! Beware of dragons and memory issues