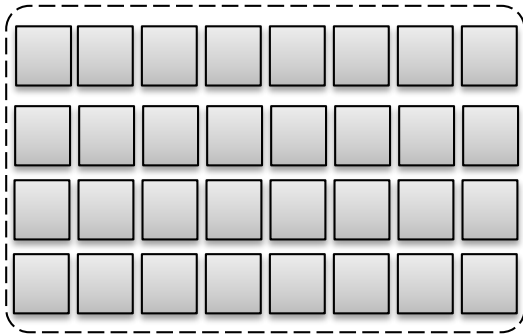# leveraging heterogeneous hardware
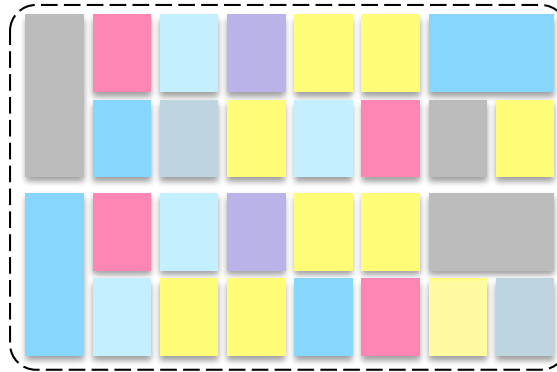
data centers

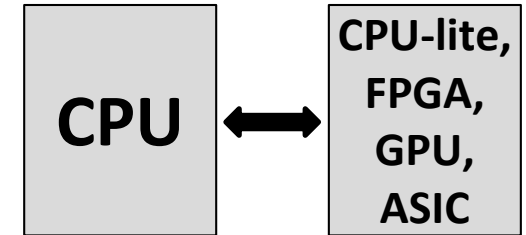**today's commodity** | **future's commodity**

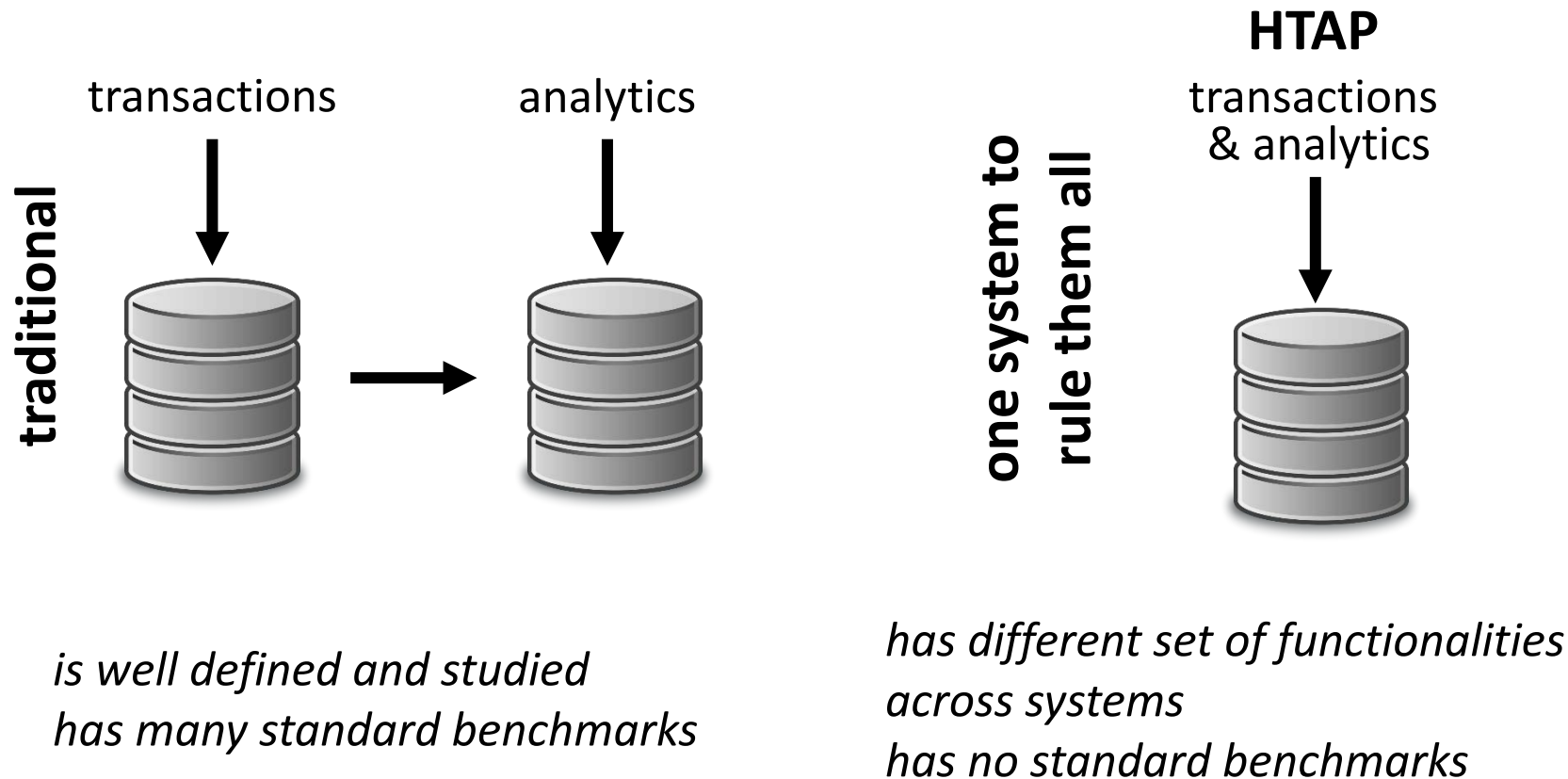**co-processors**

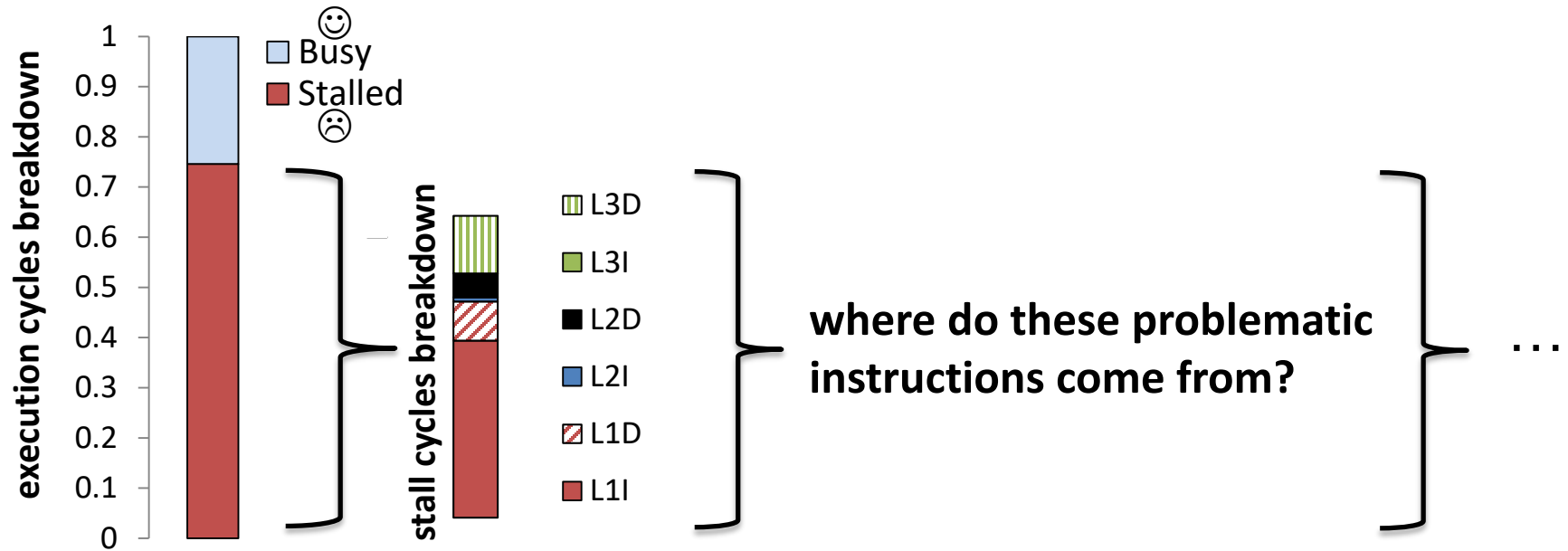CPU ⟷ CPU-lite, FPGA, GPU, ASIC

multicores   many *diverse* cores

how to schedule data-intensive tasks effectively on diverse hardware resources?

hybrid transactional/analytical processing

traditional

transactions

analytics

is well defined and studied
has many standard benchmarks

one system to rule them all

HTAP

transactions & analytics

has different set of functionalities across systems
has no standard benchmarks

how to standardize HTAP?

workload & system characterization

where do these problematic instructions come from?

...

**how do systems behave on modern hardware?
what do they need to run more efficiently?**