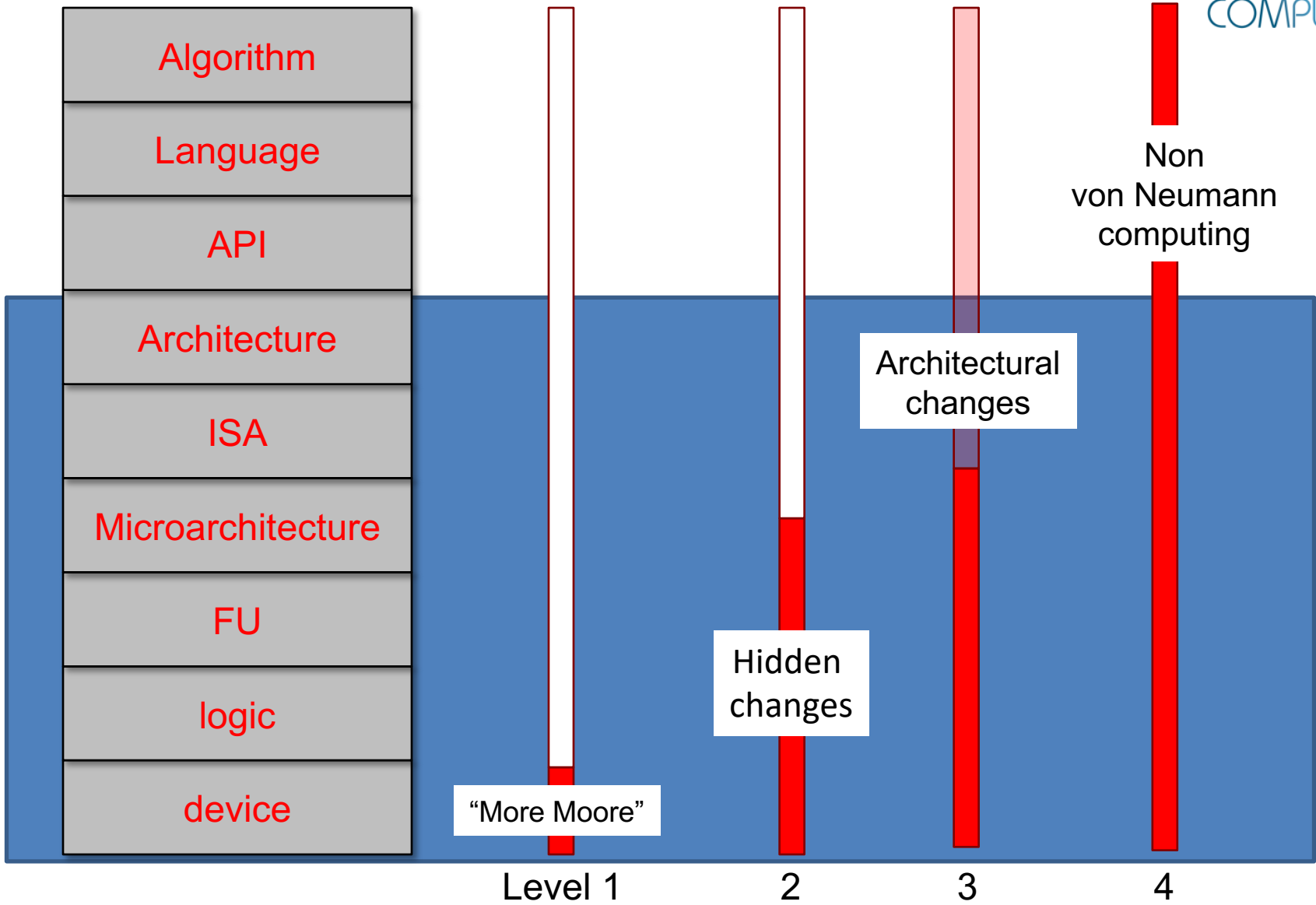
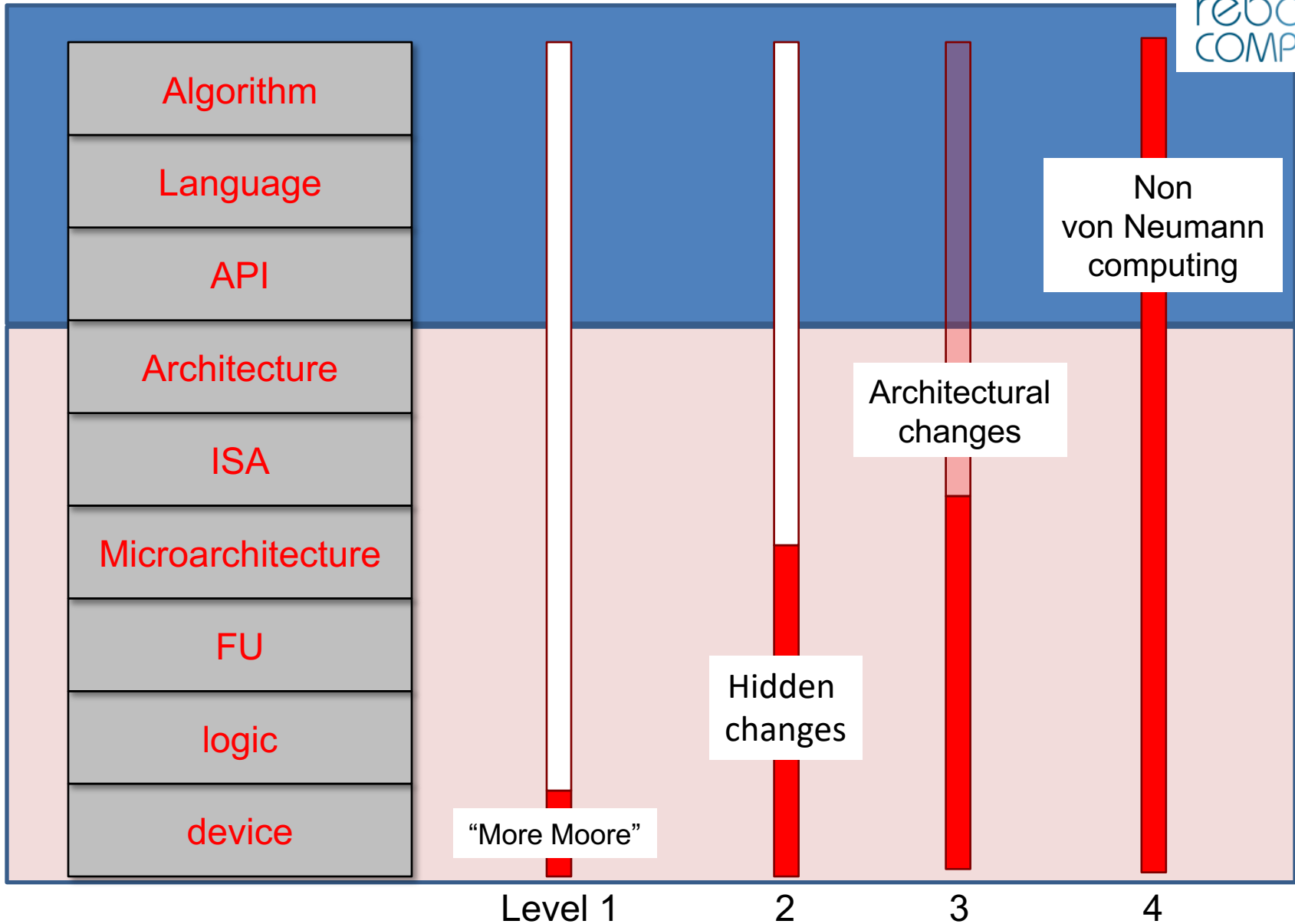


Potential Approaches vs. Disruption in Computing Stack



LEGEND: No Disruption  Total Disruption

Potential Approaches vs. Disruption in Computing Stack



LEGEND: No Disruption  Total Disruption

Past topics

(of prior iterations of this group)

- Reversible computing
 - Report in progress
- Thermodynamic
 - Successful report, NSF briefing
- Quantum
 - Successful report
- Hybrid computing (accelerators)
 - no report
- Arch 2030 workshop
 - Whitepaper (short report)
- 21st century Comparch
 - Big report

Topics for this year

- Motivation: Near term post-Moore (Broad-purpose as opposed to general-purpose computing)
 - Special use systems
 - Multi-accelerator systems
 - Distributed heterogeneous systems
- Target topics:
 - (1) Higher levels of the stack
 - “Things that are not in an EE department”
 - Compilers and OS challenges for these new systems
 - Bridging the gap between productivity programmers and performance programmers
 - Software engineering to software performance engineering to co-design
 - Performance portability (and its limits/potential)
 - Domain-Specific and “Broad Domain” languages
 - (2) What are the new workloads?
 - Not the usual suspects in the room
 - Sparsity: big graphs, sparse mesh
 - (3) Other lower-ish level topics:
 - Future interconnects
 - Approximate and reduced precision (/non-754)
 - Physical computing (analog computing)

Potential external members to invite

- Kathryn McKinley (Google ne'e Texas)
- Maya Gokhale (LLNL)
- John Shalf (LBNL)
- Krista Svore (MSR)
- Katie Schuman (ORNL)
- Sandhya Dwarkadas (Rochester)
- Mary Lou Soffa
- Margo Seltzer
- YY Zhou