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There's a blackhole in the scheduler - managing system's response time

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Power management features like DVFS introduces Time Dilation effect where progress of time slows down the lower the frequency from the task's perspective.

Combined with Heterogeneous systems (HMP) this Time Dilation become more extreme on the smaller cores. Especially on Arm mobile SoCs where the little cores are too small on many SoCs.

This manifests as big delays in task's rampup making the response time of the system mysterious from the observer's point of view. Usually manifests as complaints about 'latencies'.

There could be other potential side effects on fairness and wake up latencies while not focus of the talk, but items worth discussing to properly understand the impact on them, if any.

Assuming schedutil based systems. We want to explore:

1. How time dilation can lead utilization signal rampup time to vary based on initial conditions.
2. Explore the concept of system response time from app developer's point of view and how expectations don't meet reality.
3. Connect how response time is connected to DVFS headroom and migration margins that are hardcoded magical values currently.
4. Explore other potential side effects of this time dilation on fairness and wakeup latencies.

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