WiP: Precise Scheduling of Mixed-Criticality Tasks by Varying Speed of the Processor

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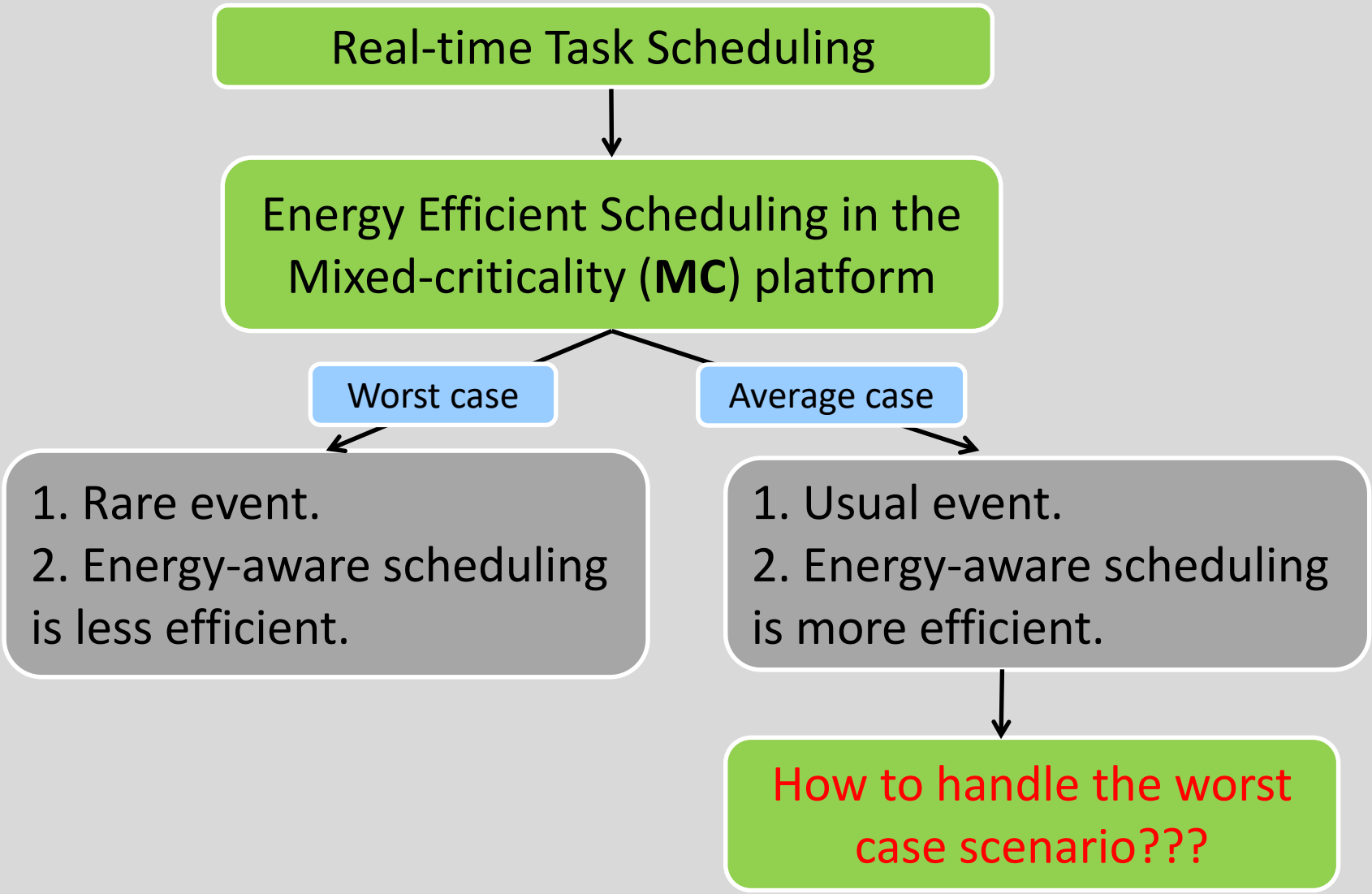
Motivation

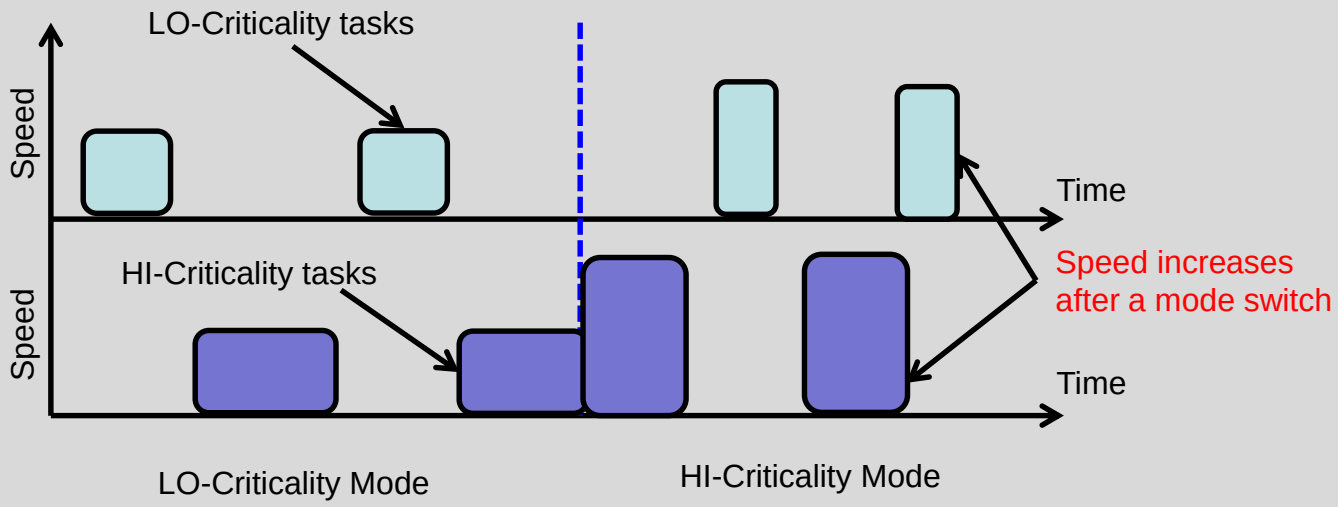

Real-time Task Scheduling
Energy Efficient Scheduling in the Mixed-criticality (MC) platform
Worst case
Average case
1. Rare event.
2. Energy-aware scheduling is less efficient.
1. Usual event.
2. Energy-aware scheduling is more efficient.
How to handle the worst case scenario???

Problem Statements

- Energy efficient scheduling for MC tasks.
- Ensuring **full** service to **all** LO-criticality tasks even in the HI-criticality mode.
- Deriving the minimum speed for the LO-criticality mode, while correctly scheduling all the tasks in each mode of operation.

Our Approach

- All tasks starts execution in an energy conserving speed, while after a mode switch speed increases.



Contribution

- Assigning virtual deadline to all HI-criticality task (in LO-criticality mode) and verify its feasibility.
- Deriving schedulability condition.
- Measuring Sub- Optimality w.r.t. **Speedup bound** and **approximation ratio**.