HEPScore considerations

Rather psychological-economic arguments than very technical….

The next years will see a lot of budget pressure due to the evolving world-wide economic situation
 (inflation, soaring energy costs, possible recession, etc.), Thus changing now the reference for the most
expensive CPU equipment might psychological not be the right time……..
→ 2026, when the resource needs go down considerably ??!!

The introduction of HEPScore will need a 're-calibration' of the sites,
 e.g. my site had a capacity of 1 MHS06, now it is 200 HEPScore
→ Use a simple conversion factor 500 HS06 == 1 HEPScore ? (E5-2650 v4 reference)
→ re-measure all different hardware on-site; but the measurement are generation dependent, so one might
    end up with 20% more or less than before in terms of real processing capacity …
    need then to adjust the next procurement to compensate ?!
    multi generations will be an issue (CERN has 4-5 y, lifetime, lengthening is also an industry trend now
     Microsoft 4 → 6 y , Goggle 3 → 4 y, AWS 4 → 5 y)

How to deal with CPU processing capacity extrapolation plots, resource estimates, etc. ? Recalculate the past ?
→ Information for the cRSG, LHCC, RRB, general funding agencies, etc.
The key is to ensure credibility and avoid the impression of obfuscation !
Using a normalized HEPScore would about preserve the absolute scales
 (1 HEPScore == 500 HS06 == 500 NHEPSCore)

The budget pressure will require the cost optimisation of sites, so the usage of specific benchmarks for each
experiment instead of an averaged HEPSCore will be tempting……
If this would be at the 20% level, this cannot be neglected!
Comparability between sites and experiments would become difficult.
Experiments are re-gauging the software anyway every year before the cRSG in terms of
(HS06/HEPSCore)s per event / processing type   → derived metric events/s per experiment and program type ??

Adoption of HEPSCore, profiting from improved benchmark for purchasing , timeline thoughts

No effect on 2024 purchases, as these need to purchased already in 2023
Limited effects
- **2025 resource increase is small (reduced running time)**
- Just replacement with probably extend lifetime of existing equipment 2026 -2029
Largest effect in 2030/2031 where the full resources for HL-LHC are needed

The general benchmarking activity is absolutely essential and has provided excellent information so far !!!!
It needs to continue and actually expand…
This is independent on how and when HEPSCore is deployed as a replacement of HS06.