Scheduling of a Cyber-Physical System Simulation

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The simulation execution architecture

Formalization of simulation scheduling

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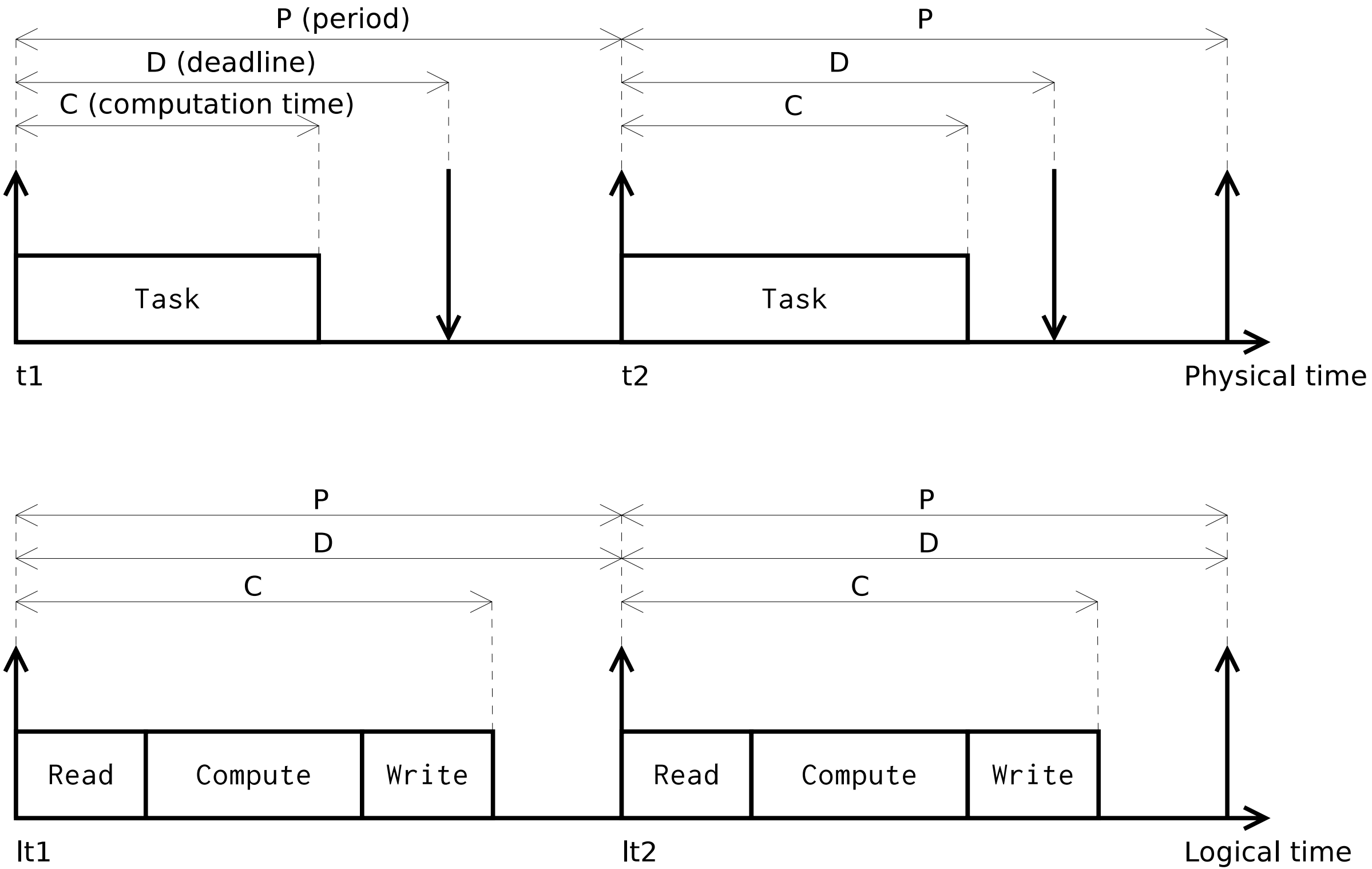
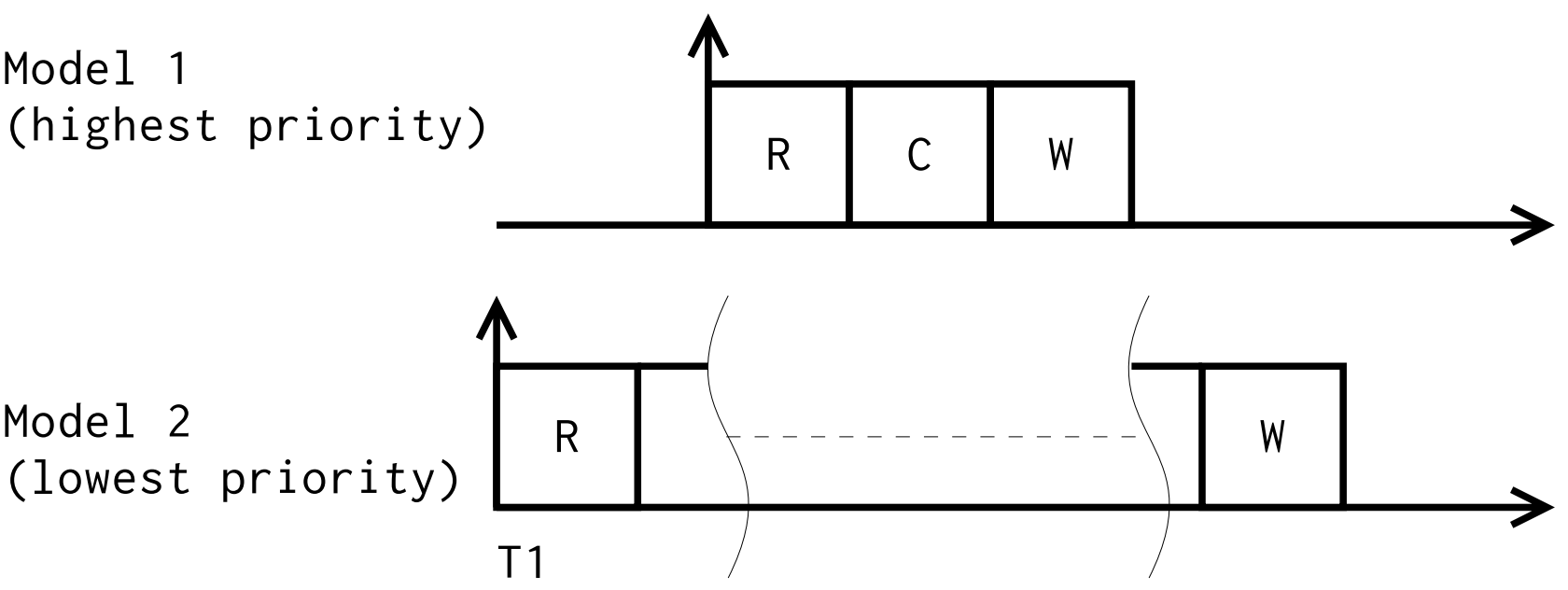
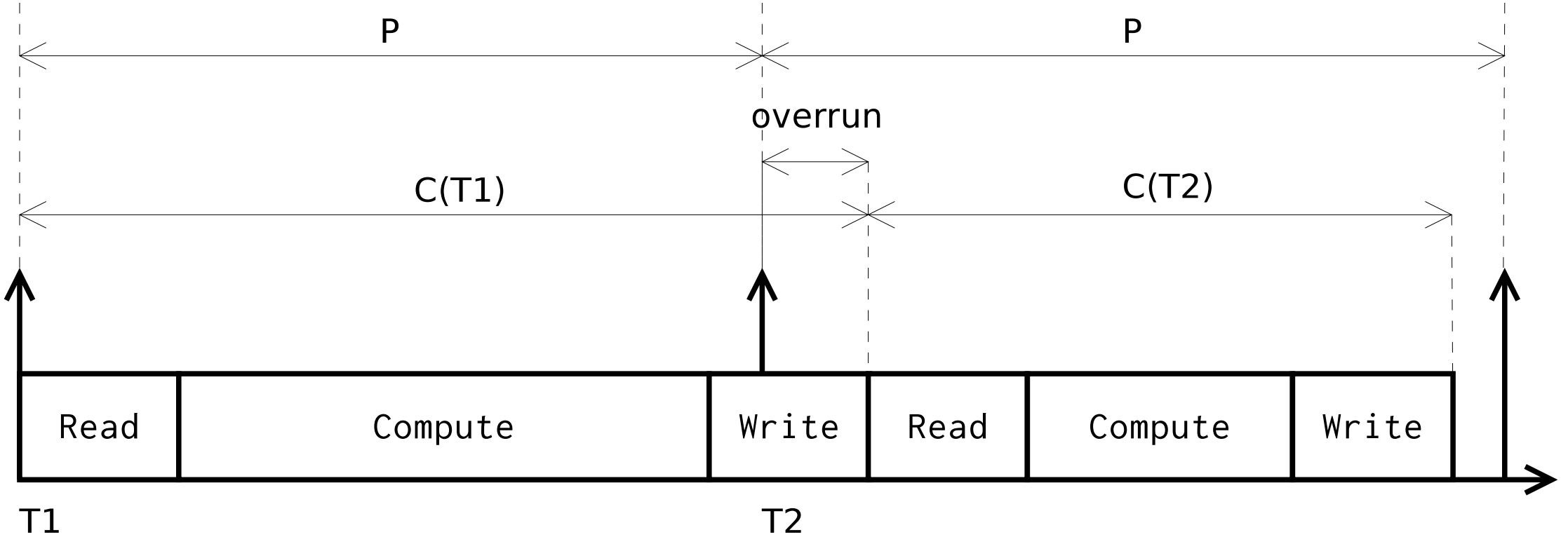
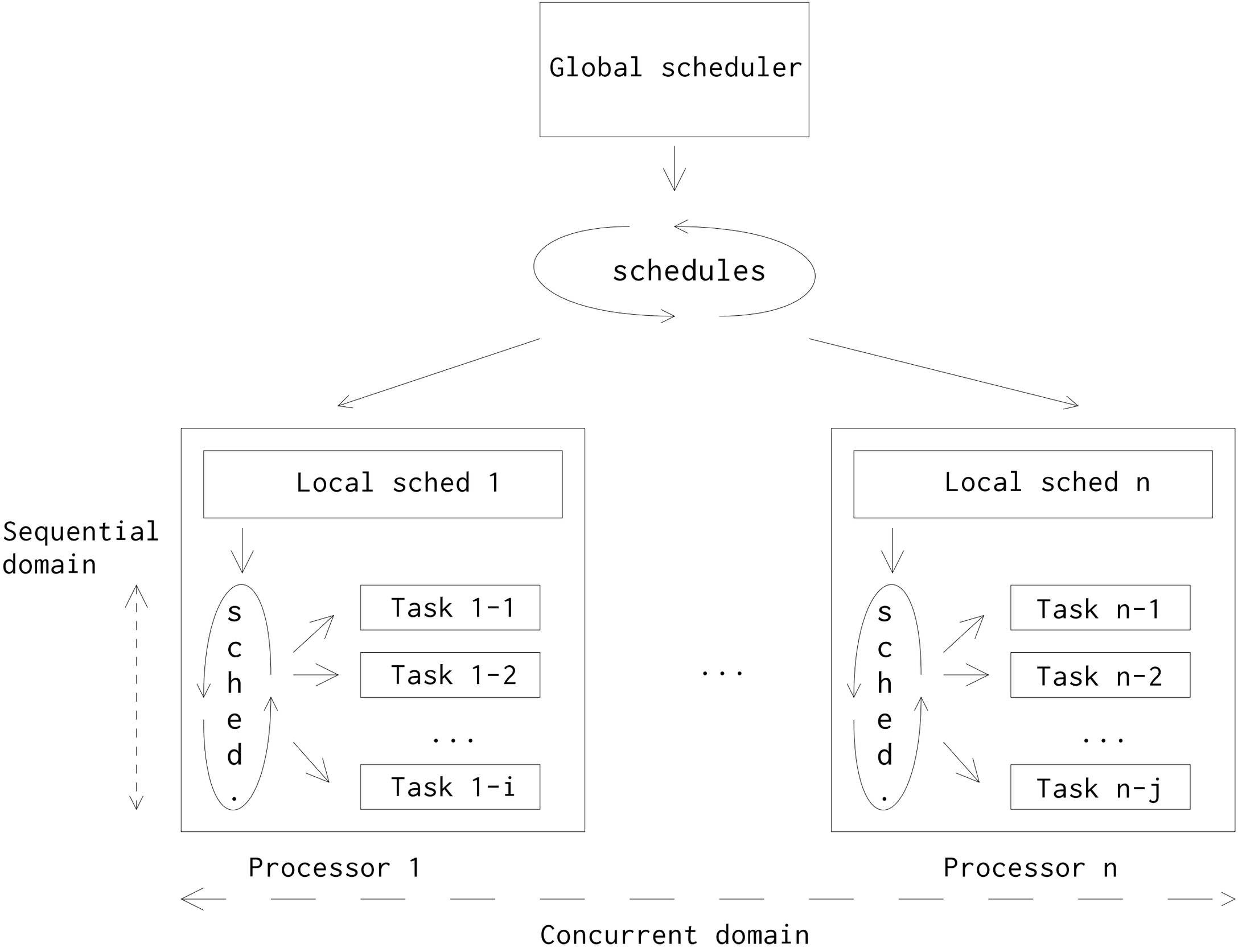

P (period)
P
D (deadline)
D
C (computation time)
C
Task
Task
t1
t2
Physical time
P
P
D
D
C
C
Read
Compute
Write
Read
Compute
Write
lt1
lt2
Logical time


Model 1
(highest priority)
R
C
W
Model 2
(lowest priority)
R
W
T1


P
P
overrun
C(T1)
C(T2)
Read
Compute
Write
Read
Compute
Write
T1
T2

$$sea = < LP, gs, c >$$


Global scheduler
schedules
Local sched 1
Local sched n
Sequential domain
sched.
Task 1-1
Task 1-2
Task 1-i
Task n-1
Task n-2
Task n-j
Processor 1
Processor n
Concurrent domain

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