

AN OVERVIEW OF PYTHONPDEVs

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McGill

MS4 Me

DEVS-Suite

X-S-Y

CD++

PowerDEVS

VLE

Adevs

User-friendliness



PythonPDEVs



Performance

```
from pypdevs.DEVS import *
```

```
class TrafficLightAutonomous(AtomicDEVS):
```

```
    def __init__(self):
```

```
        AtomicDEVS.__init__(self, "Light")
```

```
        self.state = "green"
```

```
        self.observe = self.addOutPort("observer")
```

```
        self.interrupt = self.addInPort("interrupt")
```

```
    def intTransition(self):
```

```
        state = self.state
```

```
        return {"red": "green",
```

```
                "yellow": "red",
```

```
                "green": "yellow"}[state]
```

```
    def timeAdvance(self):
```

```
        state = self.state
```

```
        return {"red": 60,
```

```
                "yellow": 3,
```

```
                "green": 57}[state]
```

```
    def extTransition(self, inputs):
```

```
        inp =
```

```
        inputs[self.interrupt][0]
```

```
        if inp == "manual":
```

```
            return "manual"
```

```
        elif inp == "auto":
```

```
            if self.state == "manual":
```

```
                return "red"
```

```
    def outputFnc(self):
```

```
        state = self.state
```

```
        if state == "red":
```

```
            v = "green"
```

```
        elif state == "yellow":
```

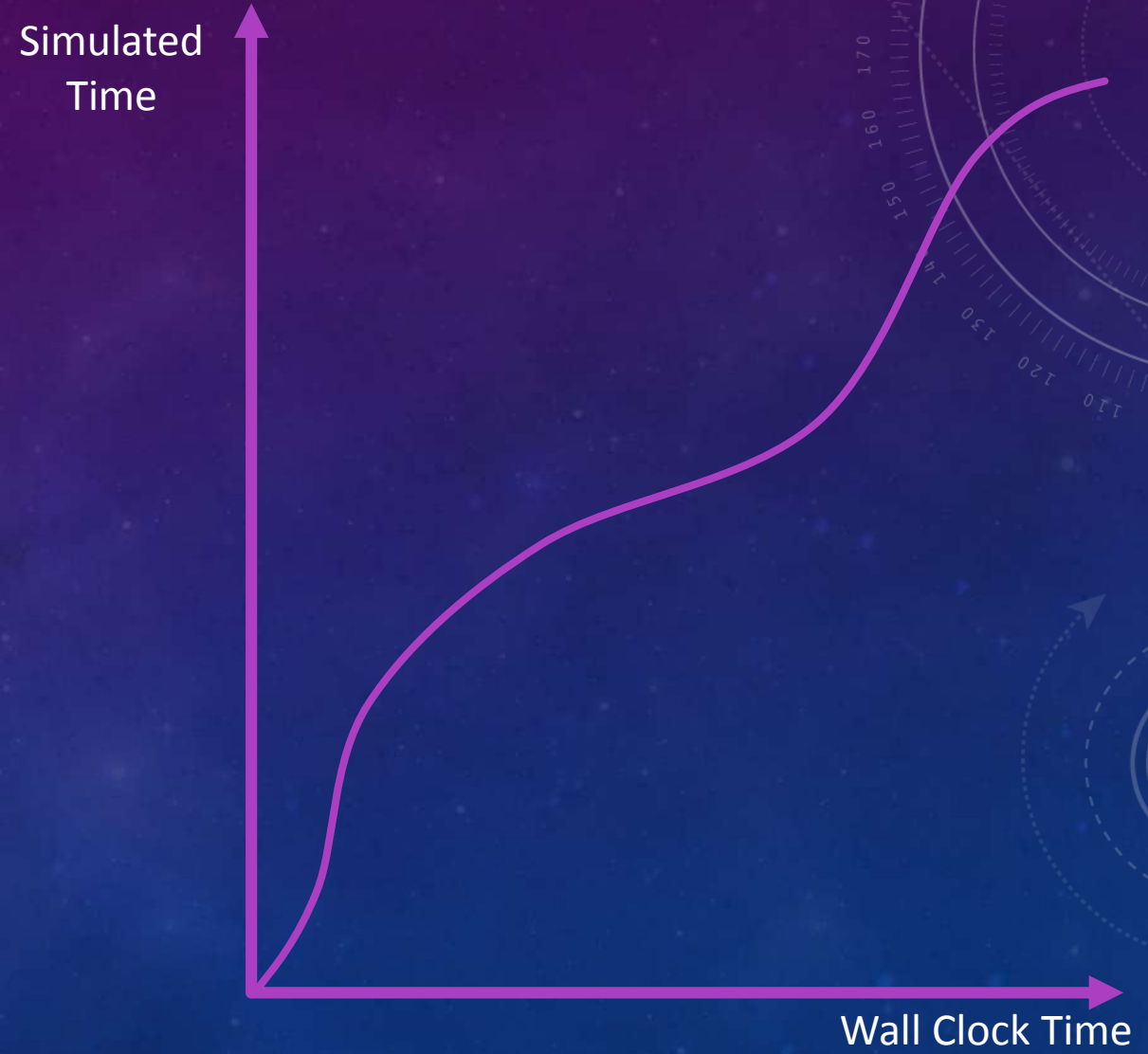
```
            v = "red"
```

```
        elif state == "green":
```

```
            v = "yellow"
```

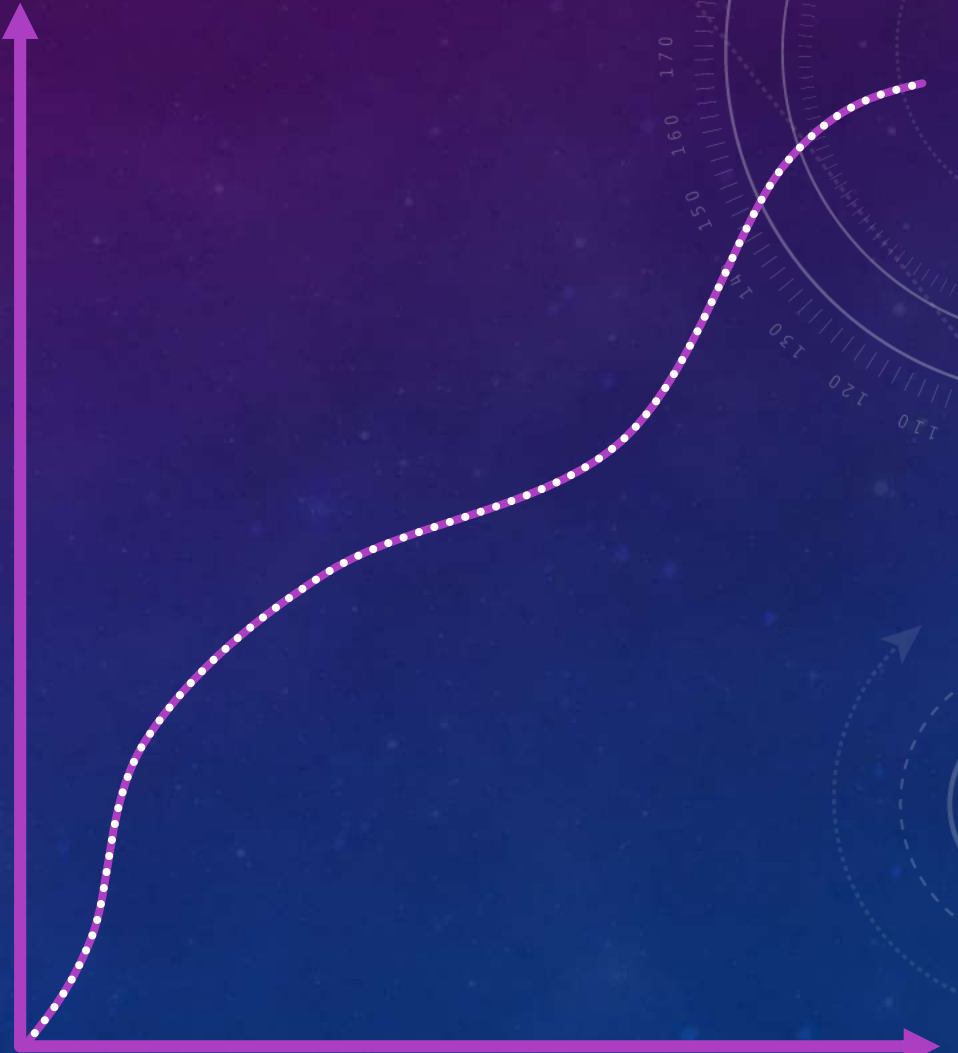
```
        return {self.observe: [v]}
```

Execution modes	As-fast-as-possible
Sequential	✓



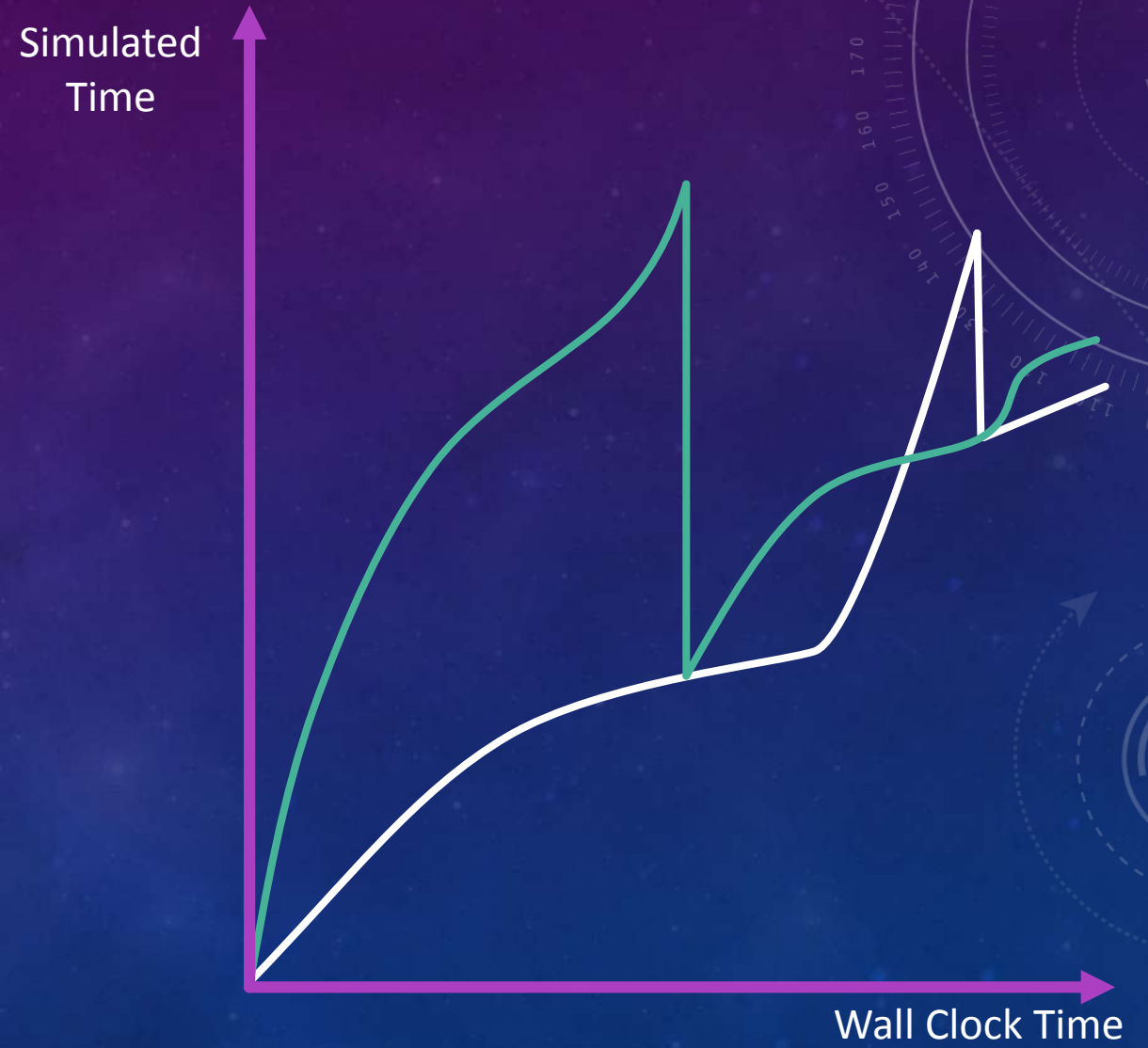
Execution modes	As-fast-as-possible
Sequential	✓
Parallel	✗

Simulated Time

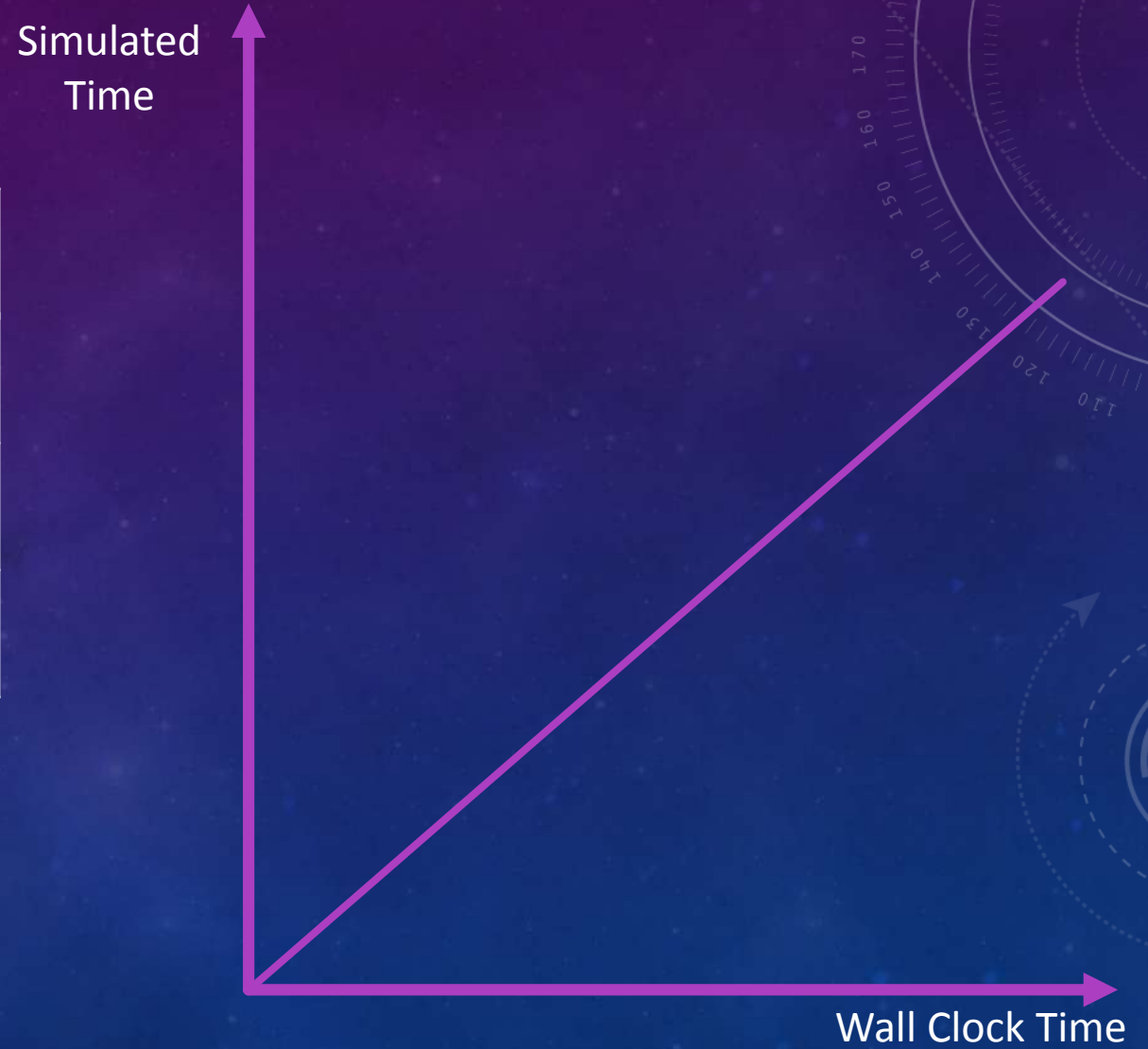


Wall Clock Time

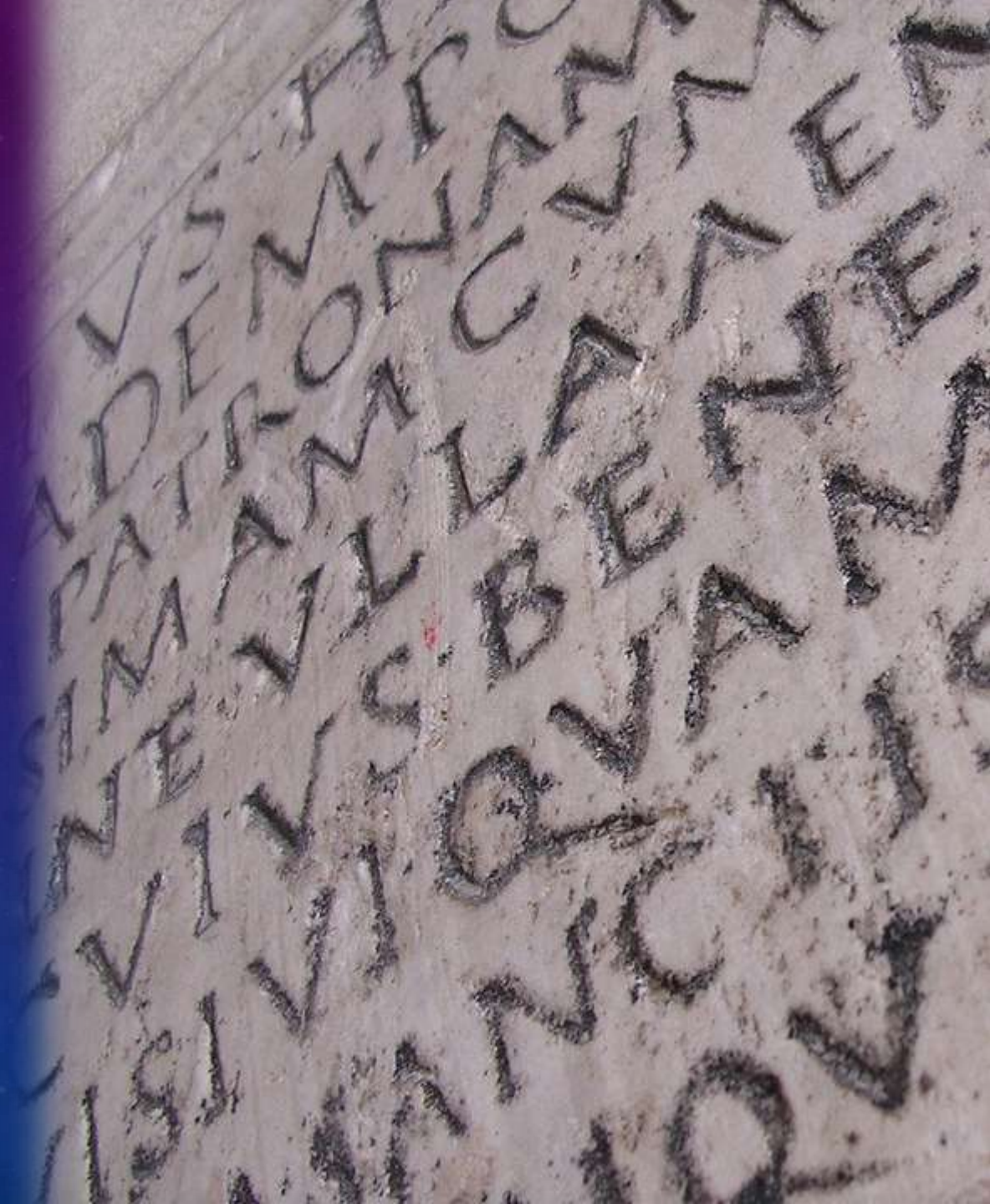
Execution modes	As-fast-as-possible
Sequential	✓
Parallel	✗
Distributed	✓



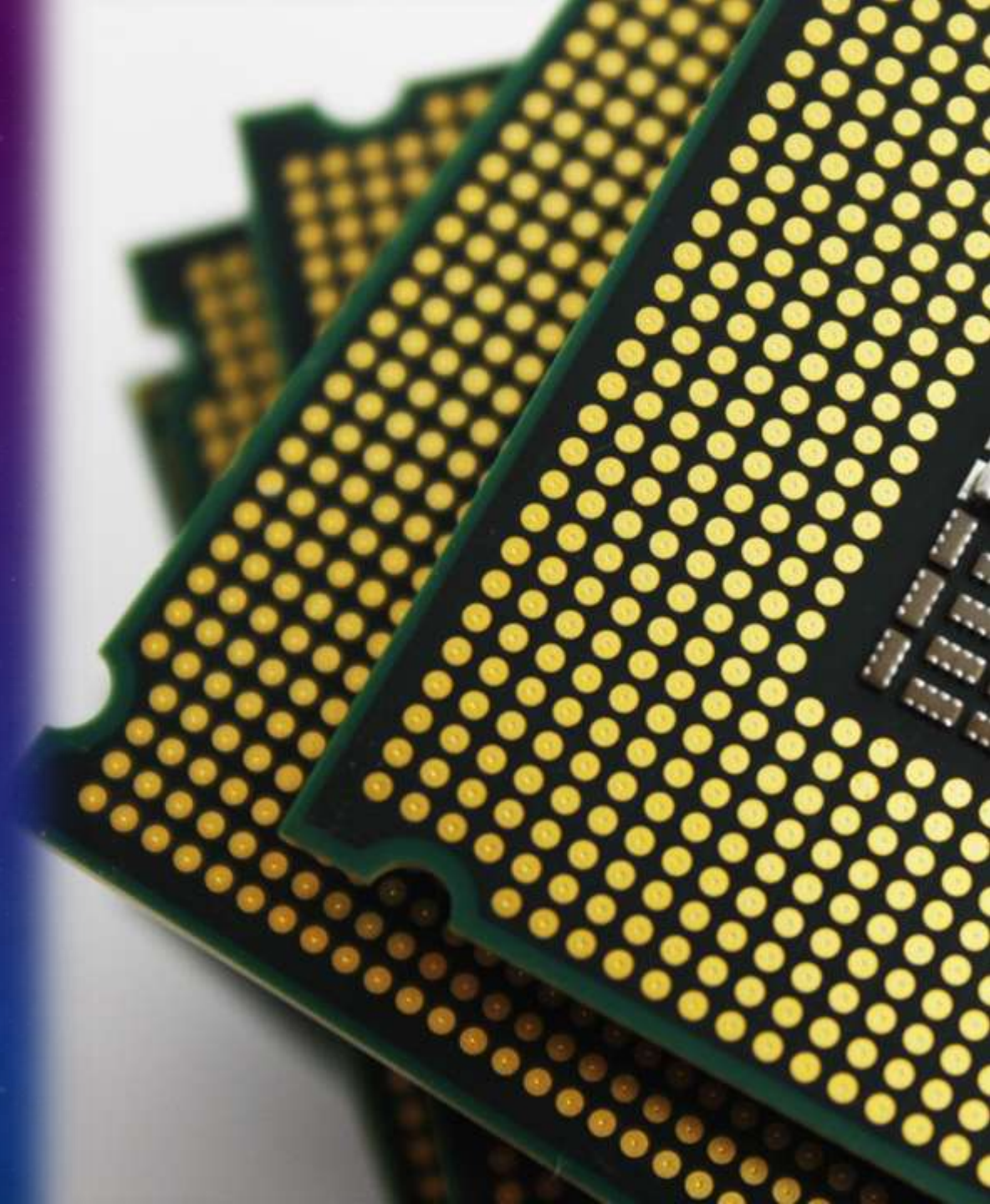
Execution modes	As-fast-as-possible	Realtime
Sequential	✓	✓
Parallel	✗	✗
Distributed	✓	✗



Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗



Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓



Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗



Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓

```

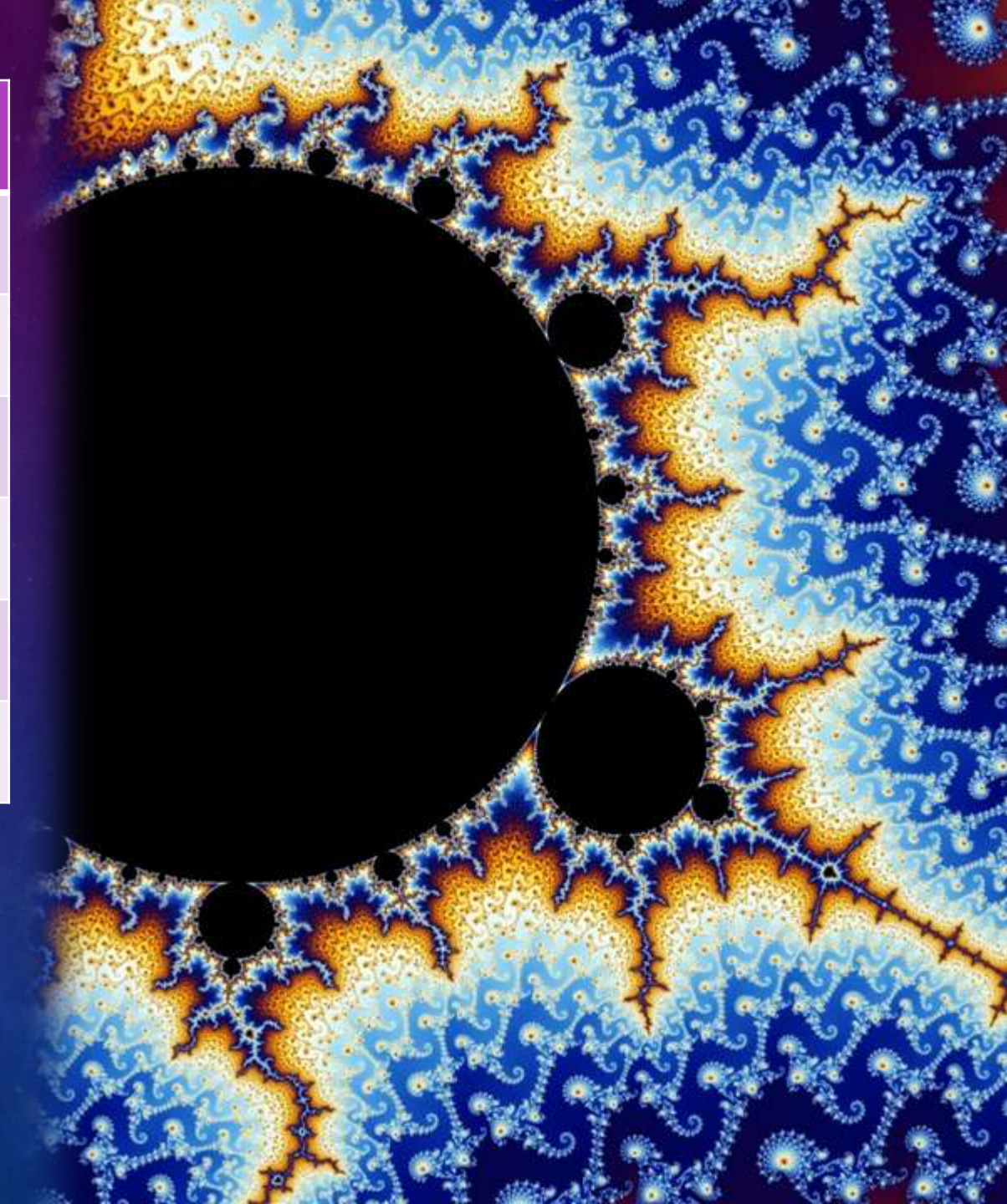
5 07:35:52 sleeper-laptop kernel: [48289.132677] Inbound IN=wlan0 OU
5 07:37:21 sleeper-laptop kernel: [48378.797582] Inbound IN=wlan0 OU
5 07:37:32 sleeper-laptop kernel: [48389.619090] Inbound IN=wlan0 OU
5 07:38:34 sleeper-laptop kernel: [48451.842293] Inbound IN=wlan0 OU
5 07:38:38 sleeper-laptop kernel: [48455.594017] Inbound IN=wlan0 OU
5 07:40:25 sleeper-laptop kernel: [48562.503720] Inbound IN=wlan0 OU
5 07:41:14 sleeper-laptop kernel: [48611.958176] Inbound IN=wlan0 OU
5 07:42:57 sleeper-laptop kernel: [48714.901000] Inbound IN=wlan0 OU
5 07:43:22 sleeper-laptop kernel: [48739.104070] usb 1-3: new high s
5 07:43:22 sleeper-laptop kernel: [48739.376413] usb 1-3: configurat
5 07:43:22 sleeper-laptop kernel: [48739.376805] scsi5 : SCSI emulat
5 07:43:24 sleeper-laptop kernel: [48741.827216] Inbound IN=wlan0 OU
5 07:43:27 sleeper-laptop kernel: [48744.411585] scsi 5:0:0:0: Direc
5 07:43:27 sleeper-laptop kernel: [48744.412236] sd 5:0:0:0: Attache
5 07:43:27 sleeper-laptop kernel: [48744.414558] sd 5:0:0:0: [sd] 1
5 07:43:27 sleeper-laptop kernel: [48744.416297] sd 5:0:0:0: [sd] w
5 07:43:27 sleeper-laptop kernel: [48744.418185] sd: sdcl
5 07:43:27 sleeper-laptop kernel: [48744.464210] sd 5:0:0:0: [sd] A
5 07:44:15 sleeper-laptop kernel: [48792.714707] Inbound IN=wlan0 OU
5 07:45:35 sleeper-laptop kernel: [48872.485324] Inbound IN=wlan0 OU
5 07:45:41 sleeper-laptop kernel: [48878.300045] Inbound IN=wlan0 OU
5 07:45:44 sleeper-laptop kernel: [48881.351217] Inbound IN=wlan0 OU
5 07:45:45 sleeper-laptop kernel: [48882.303692] Inbound IN=wlan0 OU
5 07:45:52 sleeper-laptop kernel: [48889.430725] Inbound IN=wlan0 OU
5 07:48:09 sleeper-laptop kernel: [49026.184589] Inbound IN=wlan0 OU
5 07:48:13 sleeper-laptop kernel: [49030.735783] Inbound IN=wlan0 OU
5 07:48:28 sleeper-laptop kernel: [49046.015773] Inbound IN=wlan0 OU
5 07:49:03 sleeper-laptop kernel: [49080.984064] Inbound IN=wlan0 OU
5 07:49:05 sleeper-laptop kernel: [49082.772667] Inbound IN=wlan0 OU
5 07:49:16 sleeper-laptop kernel: [49093.891441] Inbound IN=wlan0 OU
5 07:49:24 sleeper-laptop kernel: [49101.397107] Inbound IN=wlan0 OU
5 07:49:32 sleeper-laptop kernel: [49109.971138] Inbound IN=wlan0 OU
5 07:49:46 sleeper-laptop kernel: [49123.643806] Inbound IN=wlan0 OU
5 07:50:04 sleeper-laptop kernel: [49141.095465] Inbound IN=wlan0 OU
5 07:50:32 sleeper-laptop kernel: [49169.224255] Inbound IN=wlan0 OU
5 07:50:47 sleeper-laptop kernel: [49184.219329] Inbound IN=wlan0 OU
5 07:52:44 sleeper-laptop kernel: [49301.640721] Inbound IN=wlan0 OU
5 07:52:57 sleeper-laptop kernel: [49314.942914] Inbound IN=wlan0 OU
5 07:54:08 sleeper-laptop kernel: [49385.374850] Inbound IN=wlan0 OU
5 07:54:09 sleeper-laptop kernel: [49386.898571] Inbound IN=wlan0 OU

```


Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓
Checkpointing	✓	✗	✓



Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓
Checkpointing	✓	✗	✓
Nested Simulation	✓	✓	✗



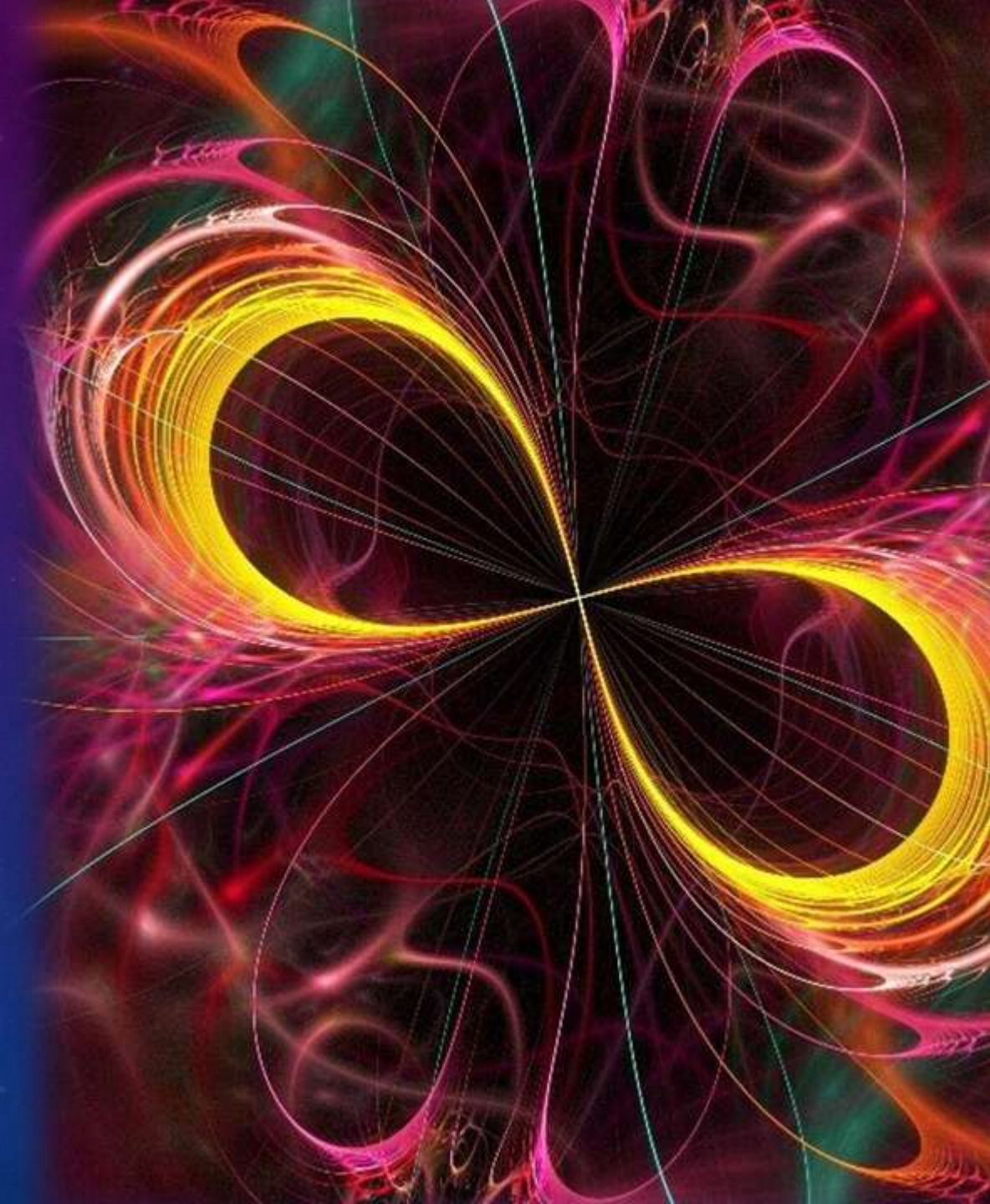
Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓
Checkpointing	✓	✗	✓
Nested Simulation	✓	✓	✗
Termination Cond.	✓	✓	✓



CHECKLIST



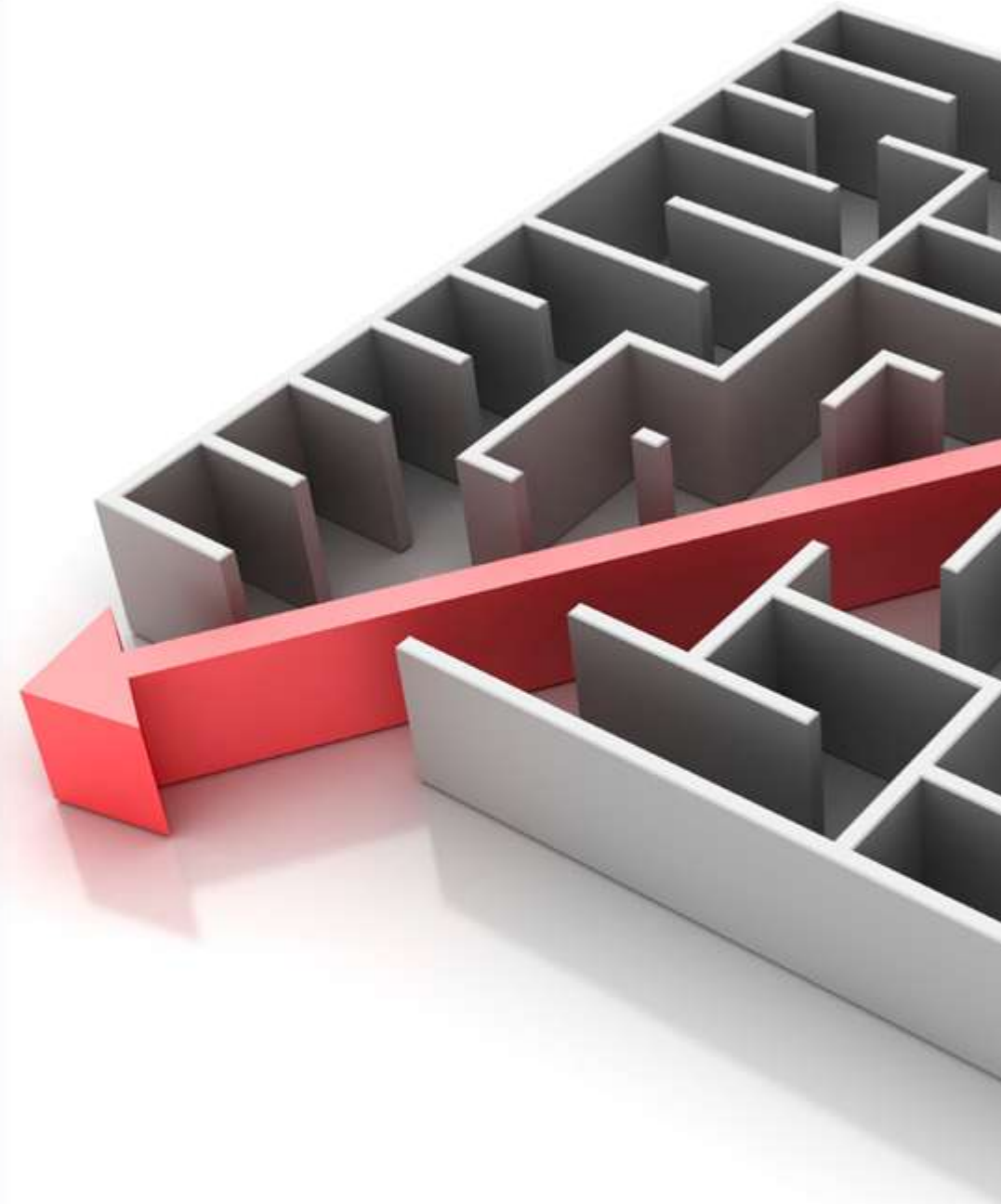
Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓
Checkpointing	✓	✗	✓
Nested Simulation	✓	✓	✗
Termination Cond.	✓	✓	✓
Livelock Detection	✓	✓	✓



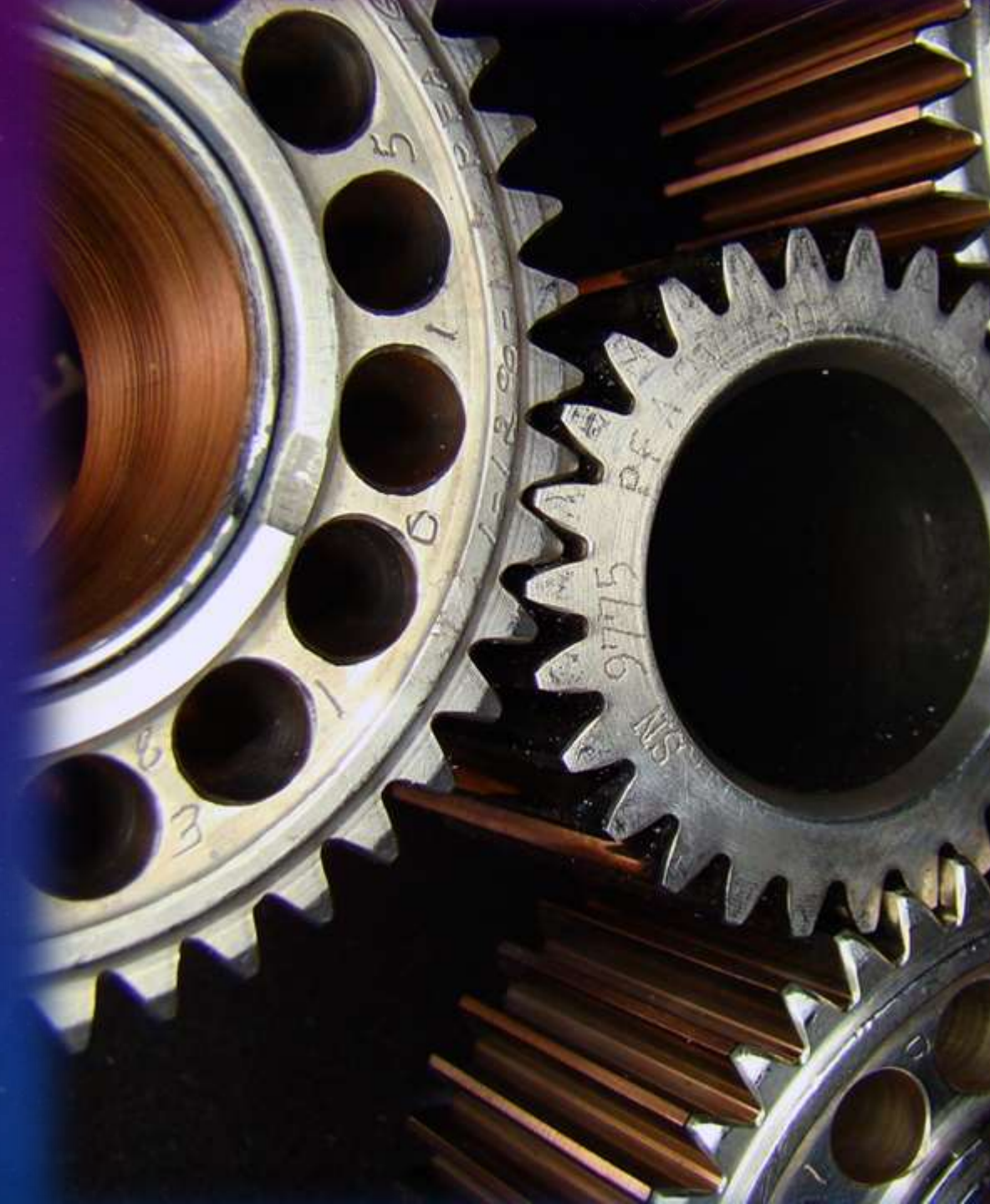
Features	Sequential AFAP	Sequential RT	Distributed AFAP
Classic DEVS	✓	✓	✗
Parallel DEVS	✓	✓	✓
Dynamic Structure	✓	✓	✗
Tracing	✓	✓	✓
Checkpointing	✓	✗	✓
Nested Simulation	✓	✓	✗
Termination Cond.	✓	✓	✓
Livelock Detection	✓	✓	✓
Transfer Functions	✓	✓	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓
Scheduling Hints	✓	✓	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓
Scheduling Hints	✓	✓	✓
Migration Hints	✗	✗	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓
Scheduling Hints	✓	✓	✓
Migration Hints	✗	✗	✓
Allocation Hints	✗	✗	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓
Scheduling Hints	✓	✓	✓
Migration Hints	✗	✗	✓
Allocation Hints	✗	✗	✓
Memoization Hints	✗	✗	✓



Performance	Sequential AFAP	Sequential RT	Distributed AFAP
Direct Connect	✓	✓	✓
Single Loop	✓	✓	✓
Termination Time	✓	✓	✓
Scheduling Hints	✓	✓	✓
Migration Hints	✗	✗	✓
Allocation Hints	✗	✗	✓
Memoization Hints	✗	✗	✓
Copy Hints	✓	✓	✓



User-friendliness



Performance