Preserve Host Virtualizability

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User-mode instructions

standard EcmaScript language

Trapping

Global scope lookup

Devices

System-mode instructions

Browser internals

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Threats to virtualizability

Implementation adds:

```
defineProperties(Array.prototype, {
  peek: { value: peekFn, writable: false, configurable: false },
  poke: { value: pokeFn, writable: false, configurable: false },
});
```

Shim tries:

```
Array.prototype = ...;
Array = ...;
```

Doesn’t matter

```
[].poke(0x4f35bc40, 0x59cd97b0)
```

Threats to virtualizability

Better:

```
defineProperties(Array.prototype, {
  peek: { value: peekFn, writable: false, configurable: true },
  poke: { value: pokeFn, writable: false, configurable: true },
});
```

Shim deletes whatever's not on whitelist:

```
delete Array.prototype.peek;
delete Array.prototype.poke;
```

How hosts should influence behavior

Everything starts deletable, shimmable

Global host objects

Well behaved exotics

Intentional host hooks

Import namespace, loading behavior

How hosts should influence behavior

Everything starts deletable, shimmable

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How host should not influence behavior

Prevent shimming

Extra properties, extra behavior, extra syntax

Badly behaved exotics (document.all)

Accidental host hooks

Hidden state, hidden I/O

Agent

Agent

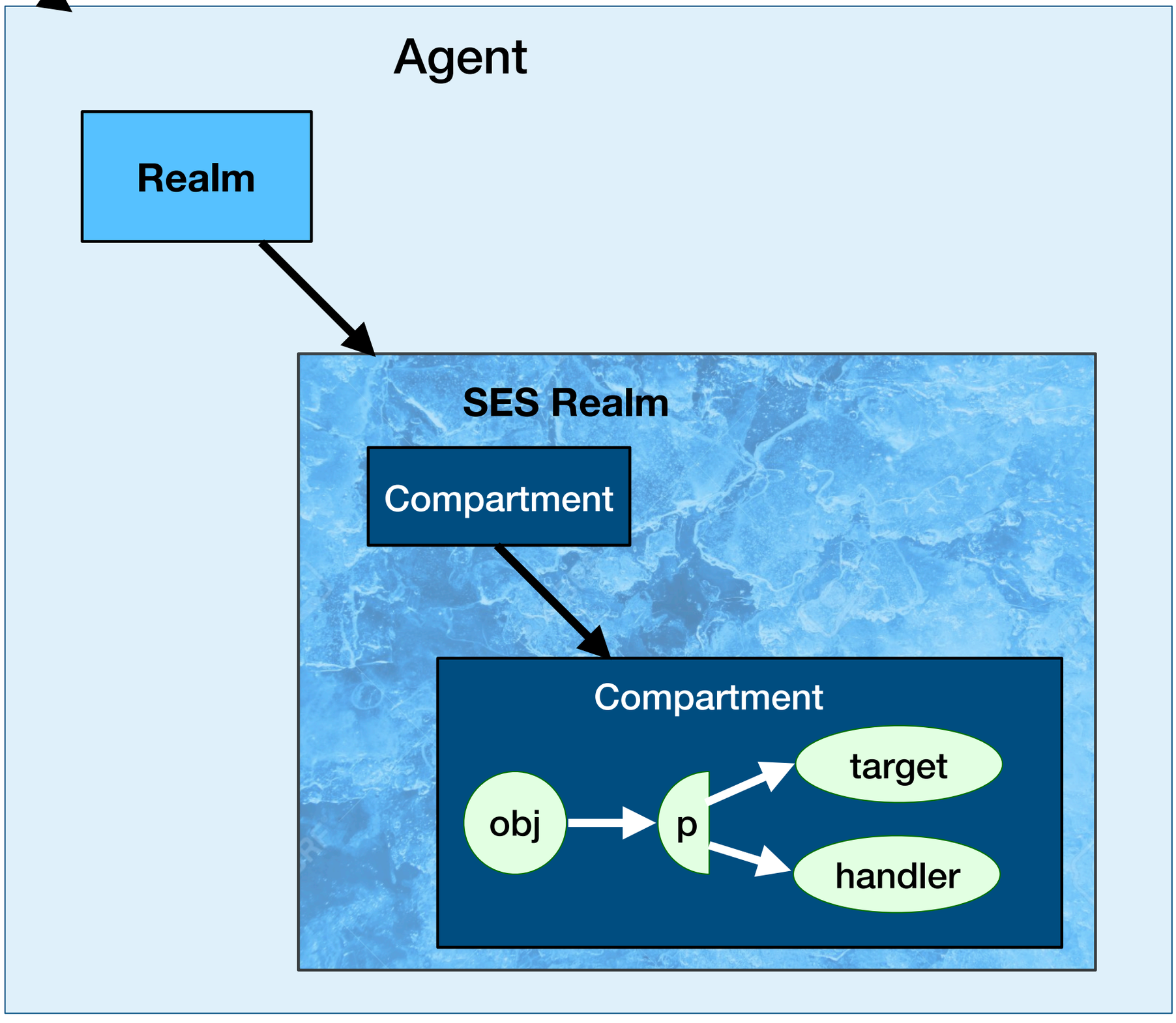
Realm

SES Realm

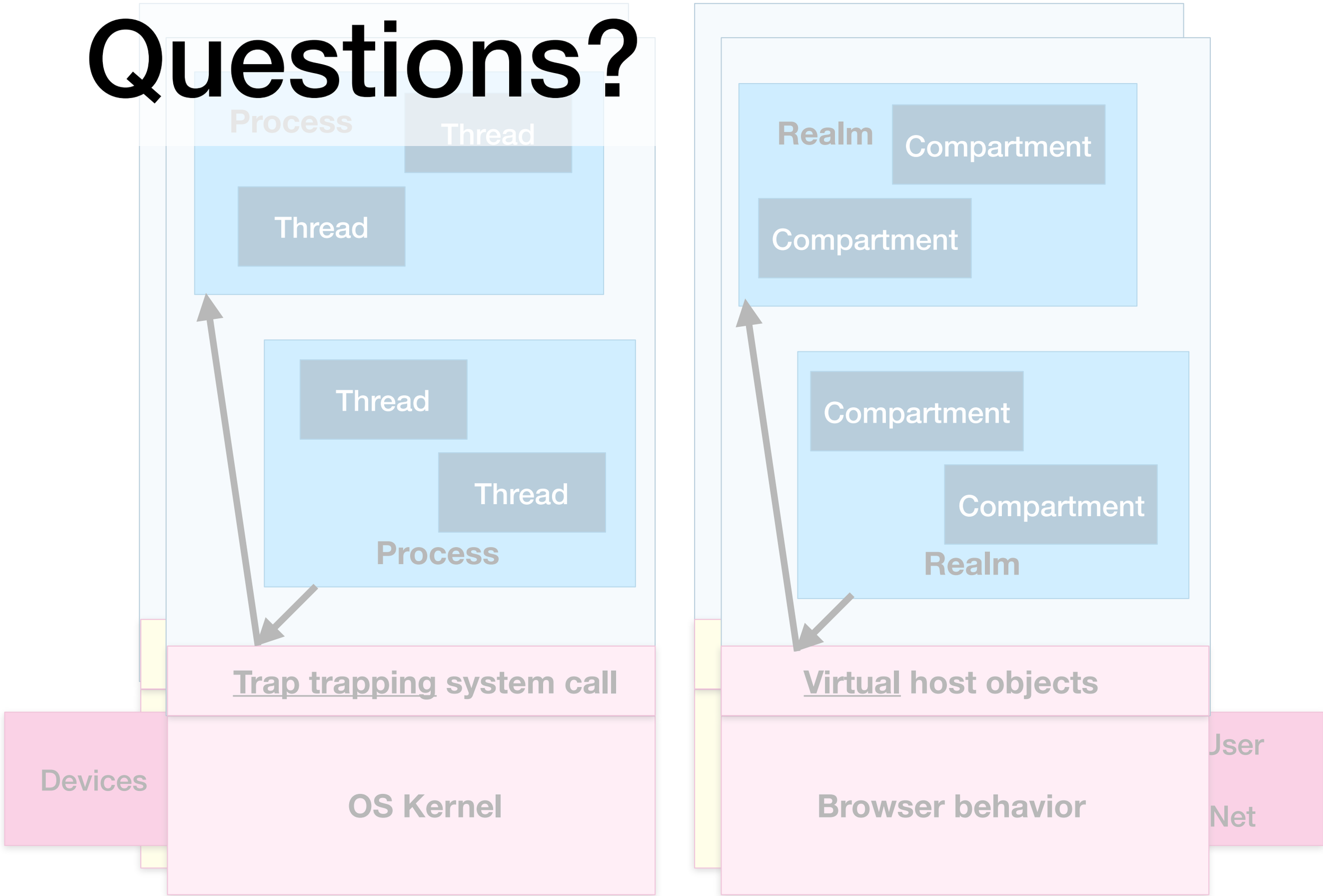
Compartment

Compartment

Agent


Agent
Realm
SES Realm
Compartment
Compartment
obj
p
target
handler

Questions?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