JavaScript Standard Library

for stage 1

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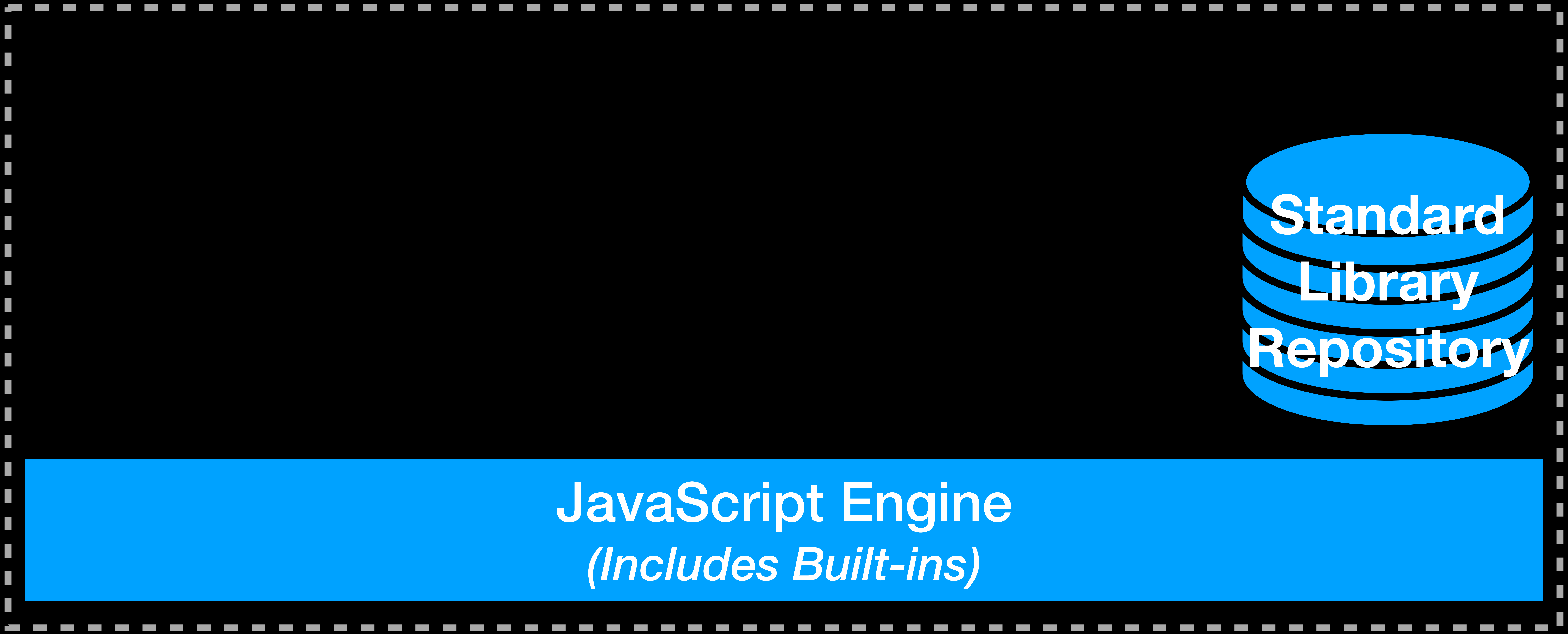
Goals

- Structure to deploy standardized JavaScript functionality
- Provide common functionality that doesn’t need to be downloaded
- Help reduce global namespace bloat
- Enable safe extensibility of library features

Overview


Standard Library Repository
JavaScript Engine
(Includes Built-ins)

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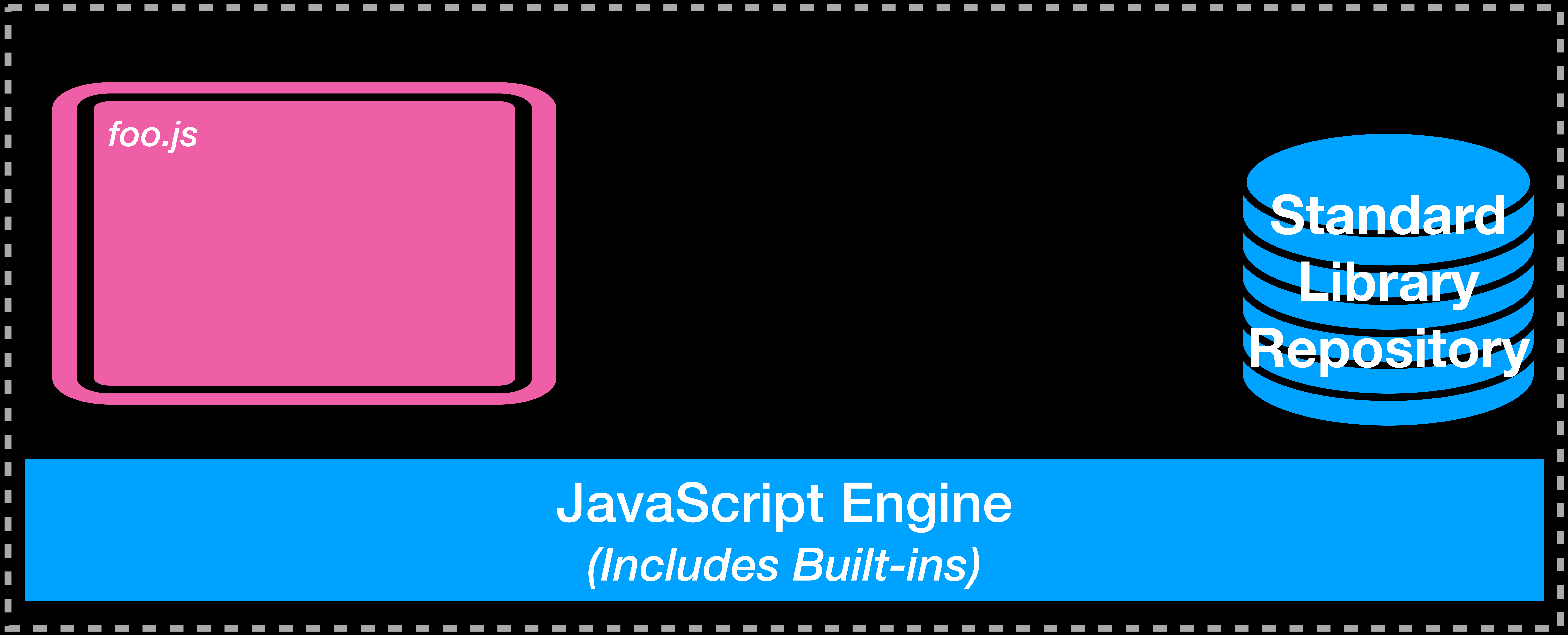
foo.js
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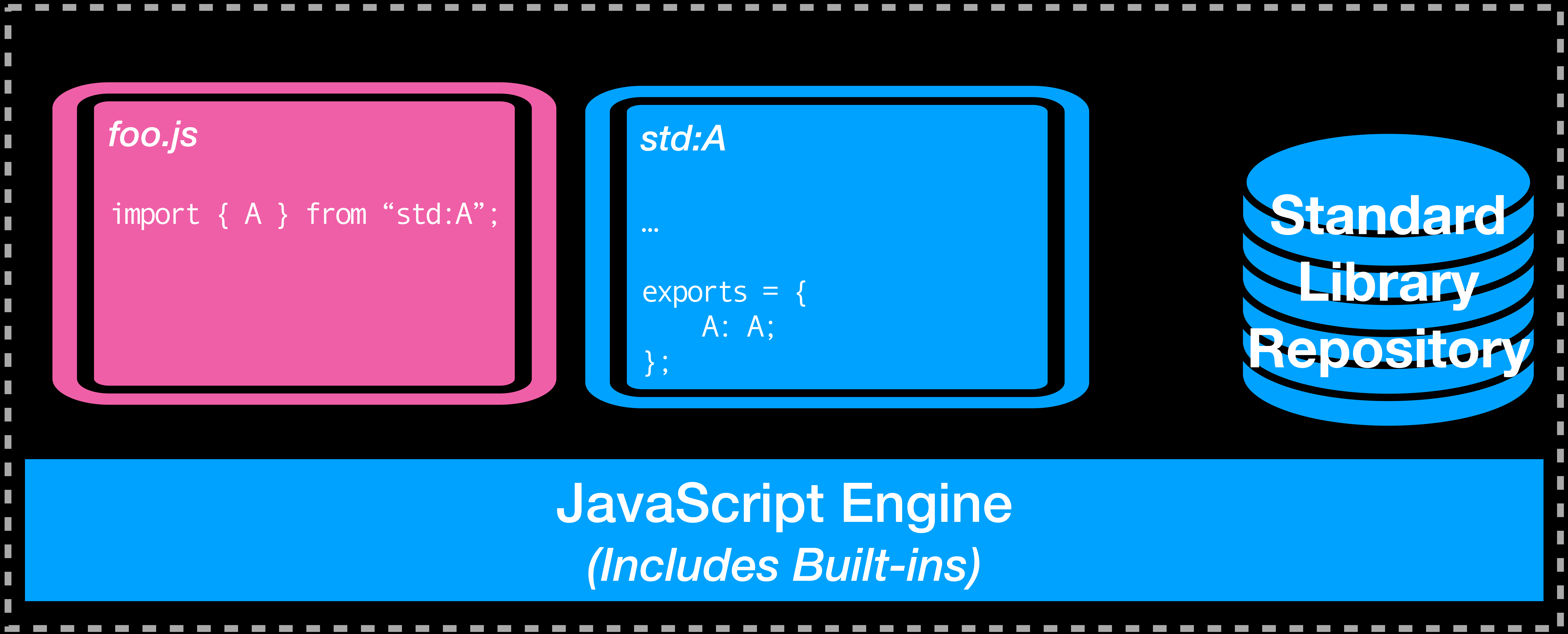


foo.js

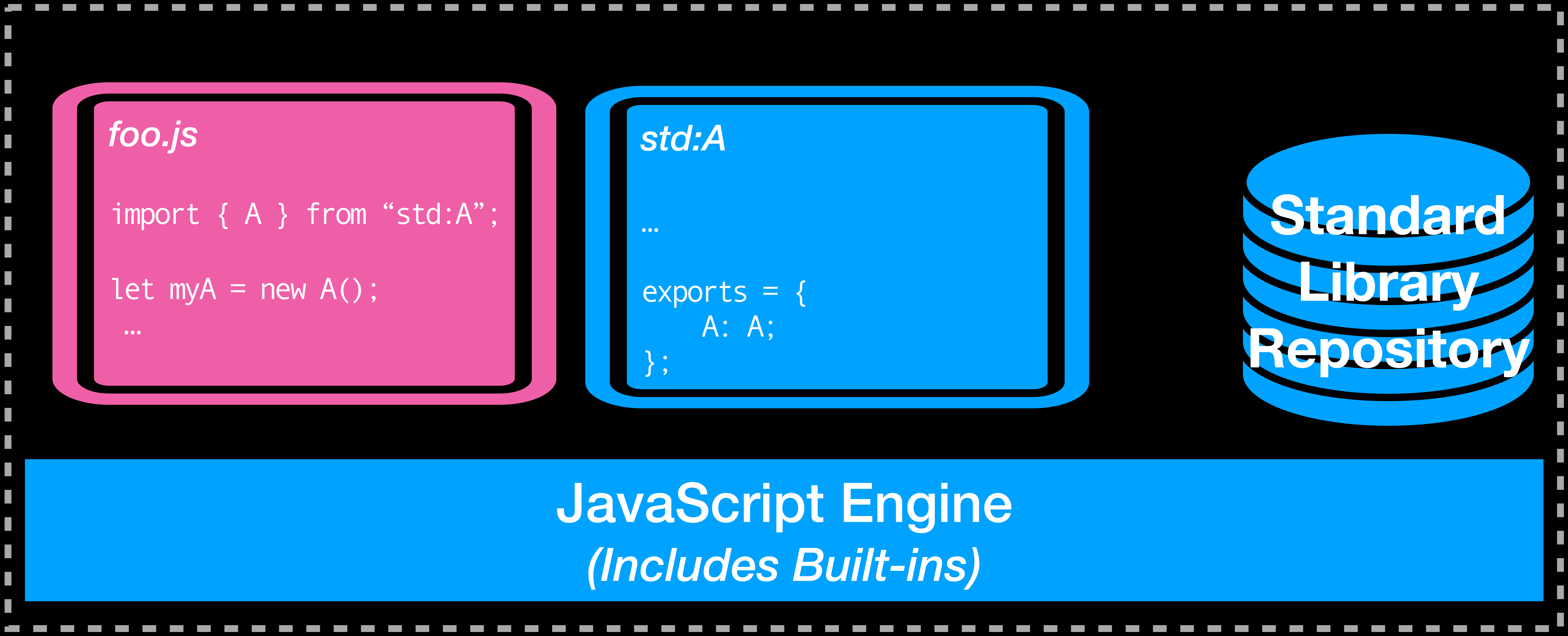
```
import { A } from “std:A”;
```

std:A

```
…

exports = {
    A: A;
};
```

Overview



foo.js

```
import { A } from “std:A”;

let myA = new A();
 …
```

std:A

```
…

exports = {
     A: A;
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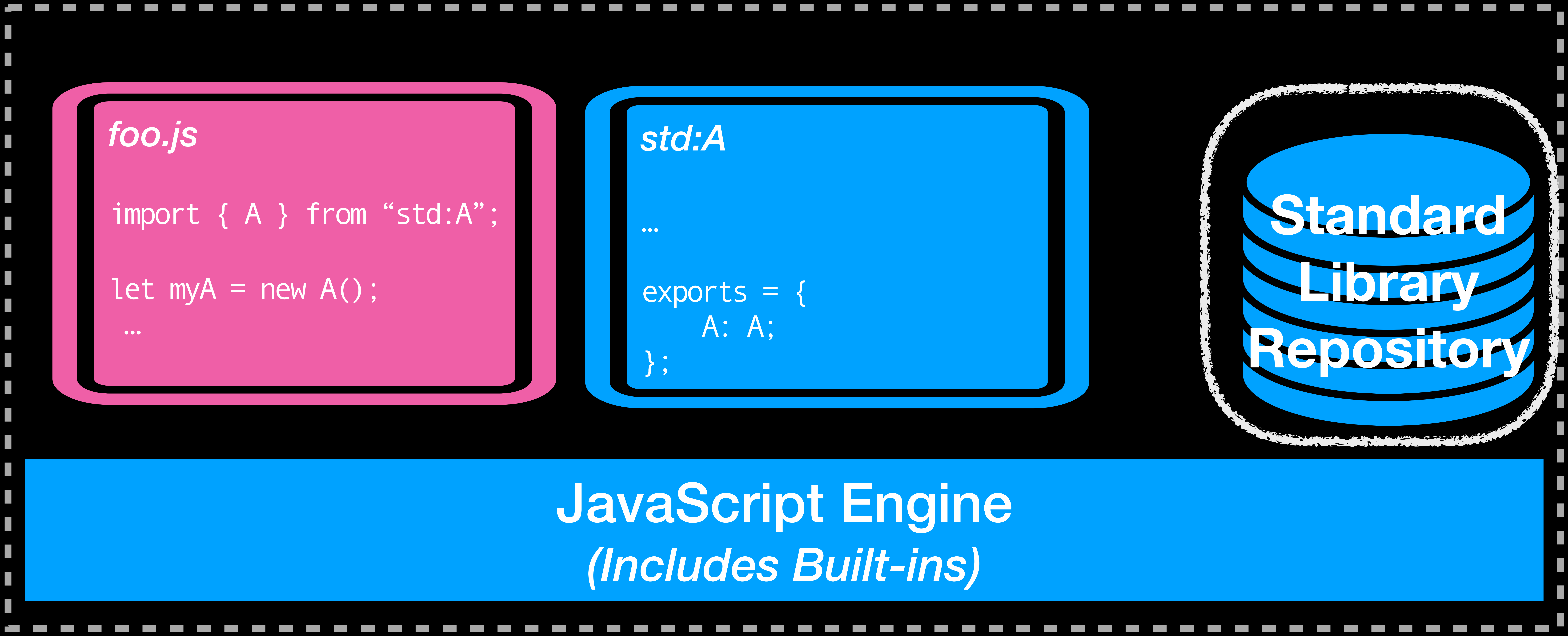
Overview



```
import { A } from “std:A”;

let myA = new A();
 …
```

```
…

exports = {
    A: A;
};
```

Example

```
import { Statistics } from “std:Statistics”;

let stats = new Statistics([6, 1, 7, 3, 4, 9, 8]);

let sum = stats.sum(); // 38;
let median = stats.median(); // 6
let geoMean = stats.geomean(); // 4.4812040415131
let stdev = stats.stdev(); // 2.6649654437397
```

Generics

```
import{ len, map } from "std:builtins";

const ar = [1, 2, 3];
const st = new Set([4, 5, 6, 7]);

len(ar); // => 3
len(st); // => 4

map(ar, (val, idx) => val * 2); // => Array {2, 4, 6}
map(st, (val, idx) => val * 2); // => Set {8, 10, 12, 14}
```

Someone proposes adding
new feature to an existing builtin …

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Let's add `Array.flatten()`

Someone proposes adding new feature to an existing builtin …

Let's add `Array.`**`smooshed!!`**

Safe Extensibility

- Imported objects are frozen
- Users extend via inheritance, wrapping, …

Extending Library

```
import { Statistics } from “std:Statistics”;
```

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import { Statistics } from “std:Statistics”;

Statistics.prototype.quantiles = (q) => { … };
```

Extending Library

```
import { Statistics } from “std:Stati    s”;

Statistics.prototype.quantiles      => { … };
```

Throws readonly error

Extending Library

```
import { Statistics } from “std:Statistics”;

class QuantileStats extends Statistics
{
    constructor(q) { }
    …
}
```

Other Questions to Consider

- What features should go into the standard library versus the core language?
- Is there a different stage process for library components?
- Can library components be spec’ed in Javascript?
- How should we collaborate with Node.js and Web standard bodies?

Future Work

- Design polyfill fallback support
- Safe version updates to existing library modules

Questions