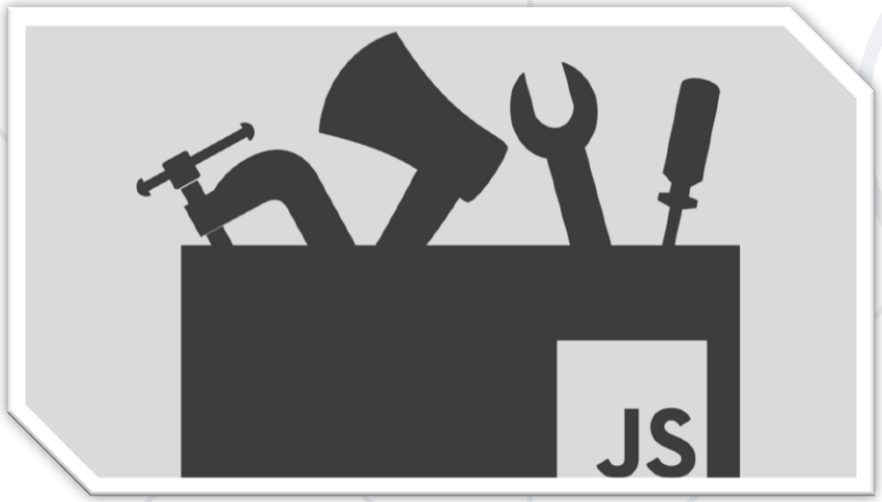
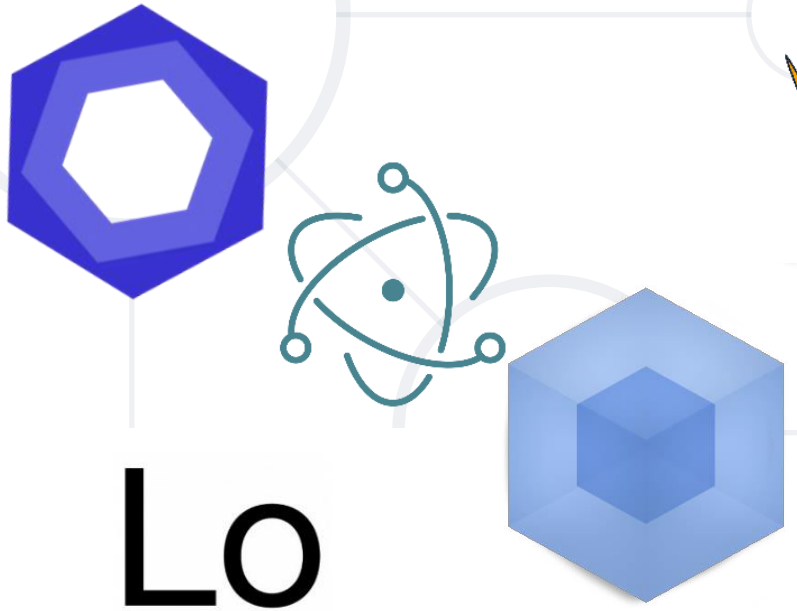
JS Tools and Libraries

Build Tools, ESLint, ElectronJS, Lodash





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Technical Trainers

Software University

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#JSCORE

Why Automate?

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JavaScript does not need to be compiled

…Right?

Modern Development Process

Optimize and Start over

Build tools

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- Build tools help us with the **build process** of our application
  - **Prepare scripts** for web (minify/uglify/concat)
  - **Run** Unit **Tests**
  - **Deploy** to Git, Cloud etc…
- Famous tools are
  - Grunt
  - Gulp
  - Webpack

Grunt

JS Task Runner

Grunt

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- Grunt can be used for various **file operations** from merging two or more files into one to shortening **javascript/css** code
- Installing
  - First install the **Grunt** command line interpreter (**CLI**)

```
npm install grunt-cli -g
```

  - Than the Grunt itself

```
npm install grunt --save-dev
```

- You may later download additional **plugins**

GRUNT

The JavaScript Task Runner

Demo

Bundle up Files with Grunt

Gulp

Automate Workflow

Gulp

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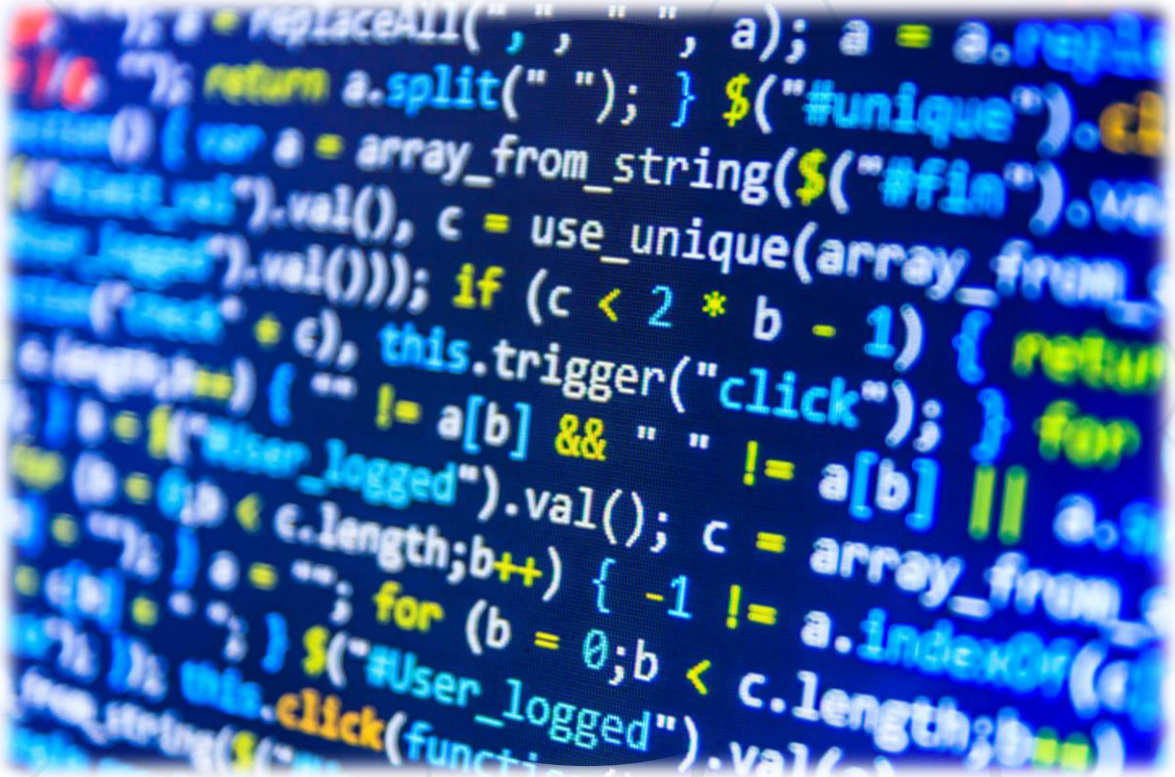
- **Gulp** is basically same as Grunt but **simpler** and **faster**
- Installing
  - First install the **Gulp CLI**

```
npm install gulp-cli -g
```

  - Than the **Gulp** itself

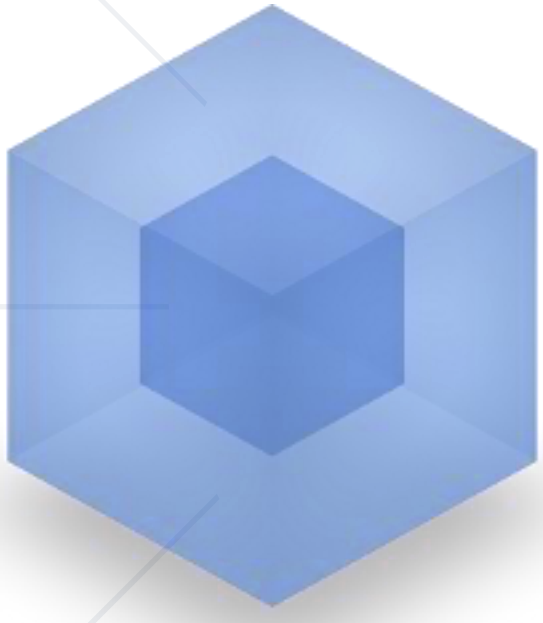
```
npm install gulp --save-dev
```

- You may download additional **plugins** in order to minify/concat files (same as “Grunt”)



Demo

Bundle up Files with Gulp



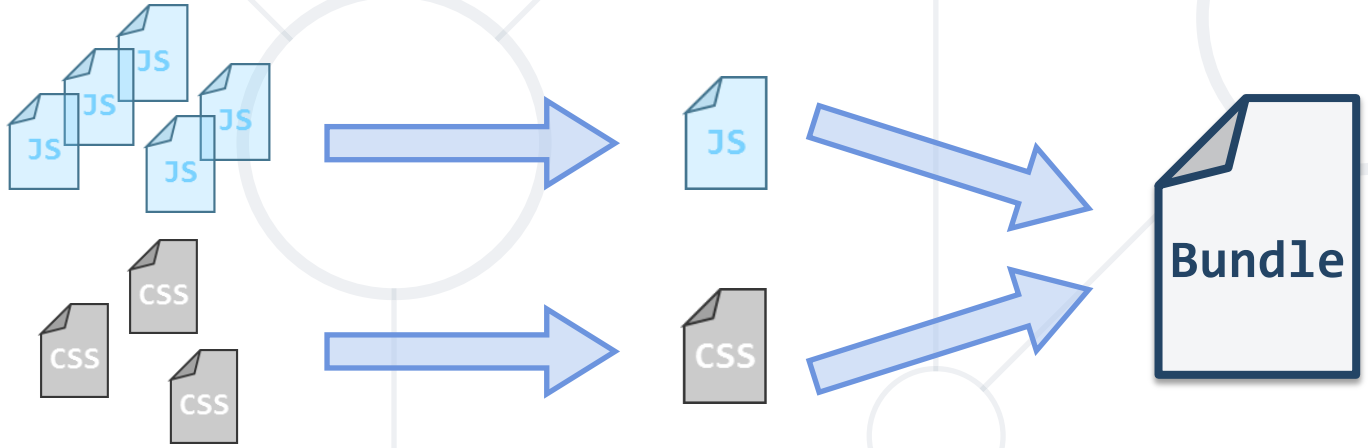
webpack
MODULE BUNDLER

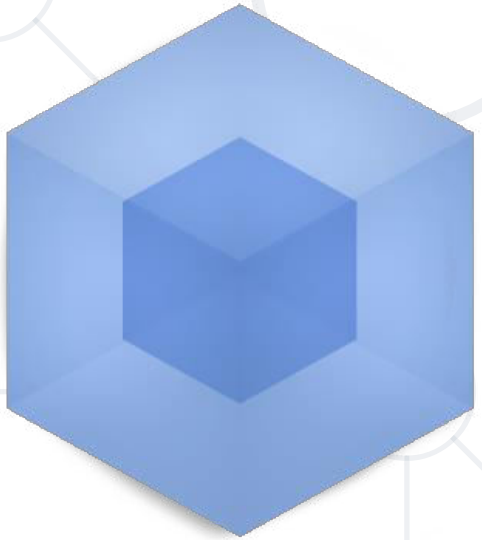
Webpack

A Wicked Smart Module Bundler

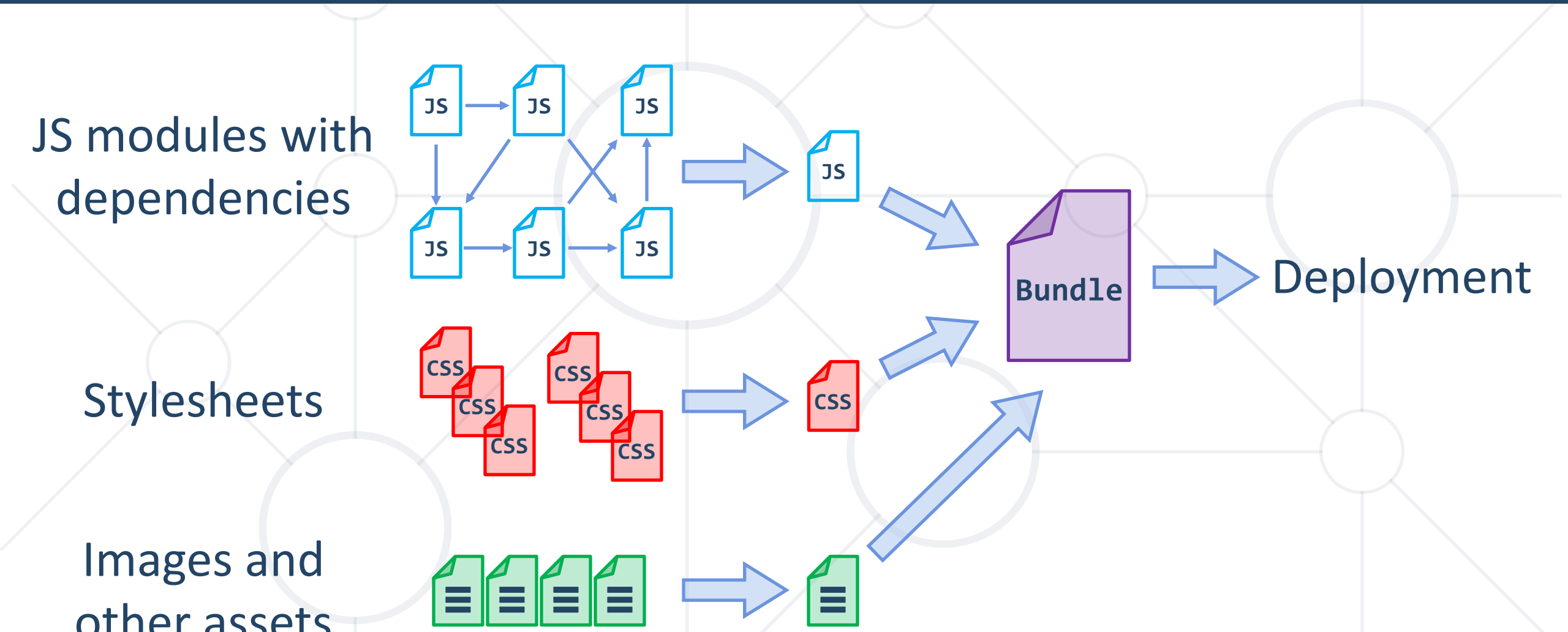
What is Webpack?

- One of the newest tools, combining **build** steps and **bundling**
  - Supports dependency management
  - Can load any 3rd party library as a module
  - Comes with it's own development server
  - Code splitting and loading as needed





Webpack Build Process



Installation and CLI

- Install **Webpack** via **npm**

```
npm install webpack -g
```

- Install the Webpack **command line interface**

```
npm install webpack-cli -g
```

- Install the add-on **development server**

```
npm install webpack-dev-server -g
```

Automation with Config Files

- Create a **webpack.config.js** file to automate your build
  - Configuration is in JSON format

```
module.exports = {
  entry: "./entry.js",
  output: {
    filename: "bundle.js"
  }
};
```

Starting module

Final output file

- When running **webpack** from the terminal, it uses this config

Enable Watch Mode

- Webpack can **watch** for file changes and **rebuild** the bundle
  - Add argument or change your **config file** to enable **hot reloading**

```
webpack --watch
```

```
module.exports = {
  entry: … , output: … ,
  watch: true
};
```

Web Server with Watch Mode

- Run the **development server** from the terminal

```
webpack-dev-server
```

  - Change your **config file** to enable **hot reloading**

```
module.exports = {
  entry: … , output: … ,
  devServer: {
    publicPath: "/dist/",
    watchContentBase: true,
  }
};
```

Processing Files with Loaders and Preloaders

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- **Loaders** apply transformations to files
  - Can be downloaded with **npm** and configured in the **main config**

```
module.exports = {
  entry: "./entry.js",
  output: {filename: "bundle.js"},
  module: {
    loaders: [ … ]
  }
};
```

Loader format

```
{
  test: /\.jsx$/,
  exclude: /node_modules/,
  loader: "babel-loader"
}
```

- **Preloaders** are the same, they just run **before** any loaders

Scripts and Production Build

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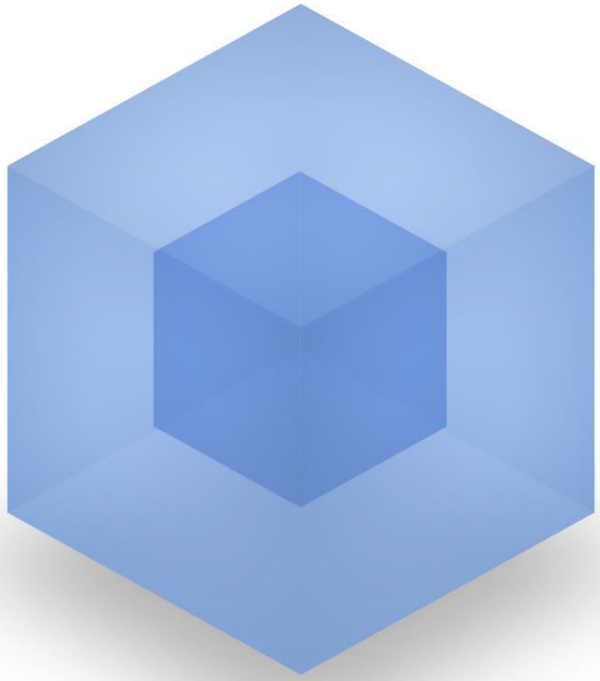
- Webpack uses **npm scripts** for further automation
  - Add to your **package.json** file

```
scripts: {
  "start": "webpack-dev-server"
};
```

- To **minify** the bundle for deploy, run webpack with **–p** argument
- You can specify a different config file for production

```
webpack --config webpack-production.config.js -p
```



Live Demo

Automated build with WebPack

Lodash

High-Performance Object Operations

Lodash

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- Utility **library** that extends working with **objects**, **arrays** etc.

```
let _ = require('lodash');

_.findLast([1, 2, 3, 4], (n) => {
  return n % 2 === 0
}) // 4
```

- Main goal is **performance**.
- Reduces boilerplate and inconsistent code.

Example – Random Number

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```
// Naive utility method
function getRandomNumber(min, max){
 return
   Math.floor(Math.random() * (max - min + 1)) + min;
 }
getRandomNumber(15, 20);
```

VS

```
let _ = require('lodash');

_.random(15, 20);
```

Example – Removing Property

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```
Object.prototype.remove = function(arr) {
  let that = this;
  arr.forEach((key) => delete(that[key]));
};
let objA = {"name": "Pesho", "car": "ford", "age": 23};
objA.remove(['car', 'age']); // {"name": "Pesho"}
```

VS

```
let _ = require('lodash');

objA = _.omit(objA, ['car', 'age']); // {"name": "Pesho"}
```

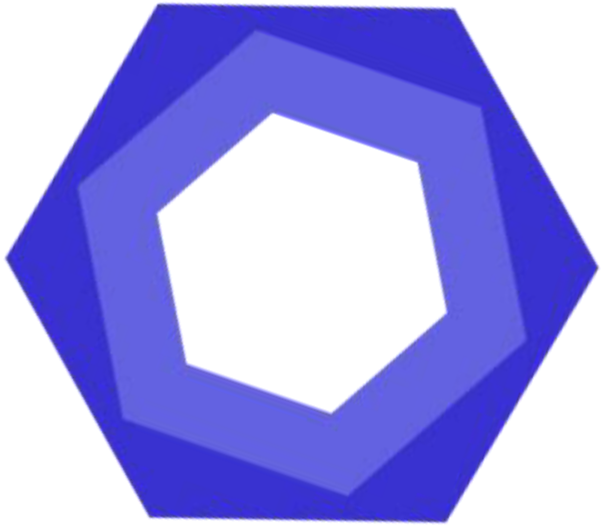
Example – Deep Cloning


```
let objA = { "name": "Stamat" };
// Normal method? Too long.
// You can try with JSON.stringify(JSON.parse(objA)).
// But it won't include methods.
```

VS

```
let _ = require('lodash');

let objB = _.cloneDeep(objA);
 objB === objA // false
```



ESLint

Pluggable Linting

ESLint

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- ESLint is a **tool** which keeps track of code for inconsistent content (**typos**, **formatting** etc)
  - Main purpose is to **reduce bugs** and make the **code** more **readable**
  - It's done by following **rules** which can be configured

```
{
  "rules": {
    "semi": ["error", "always"],
    "quotes": ["error", "double"] }
}
```

Demo

Configuring ESLint

Electron.js

Javascript Framework for Desktop apps

Electron.js

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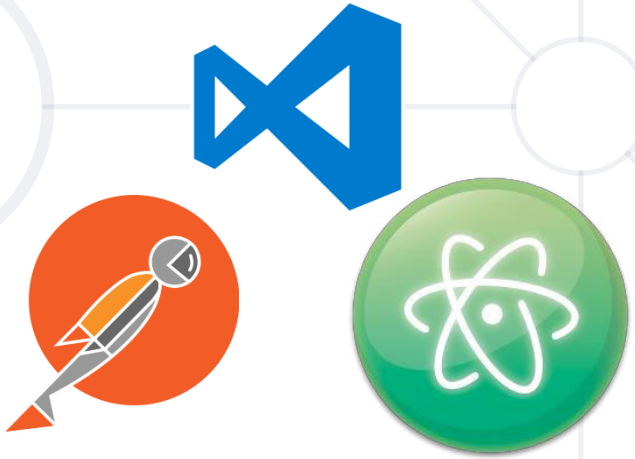
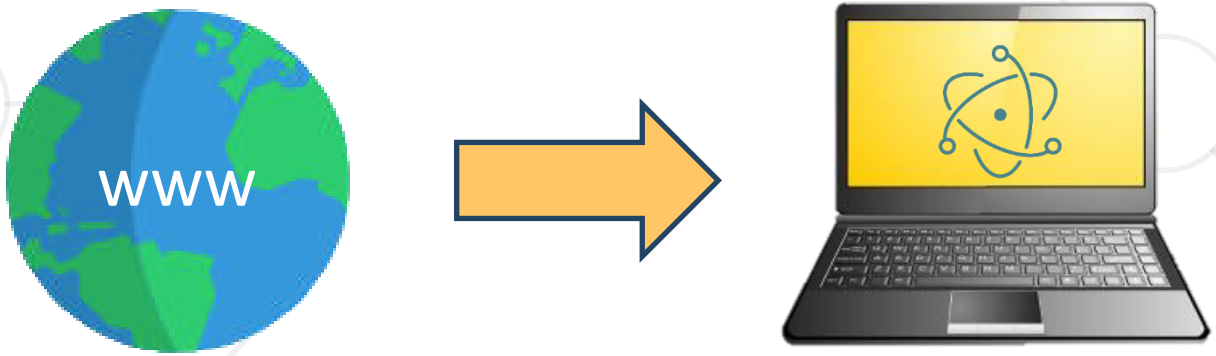
- Open-source **framework** developed by GitHub
  - You can build **desktop** applications using the **Node.js** runtime and the **Chromium** web browser
- For the **view** rendering you can use the very same **HTML** and **CSS** you already use in the web browser
- Apps made with Electron.js
  - VS Code
  - Postman
  - Atom





Demo

Deploy our Web App as Desktop App

Summary

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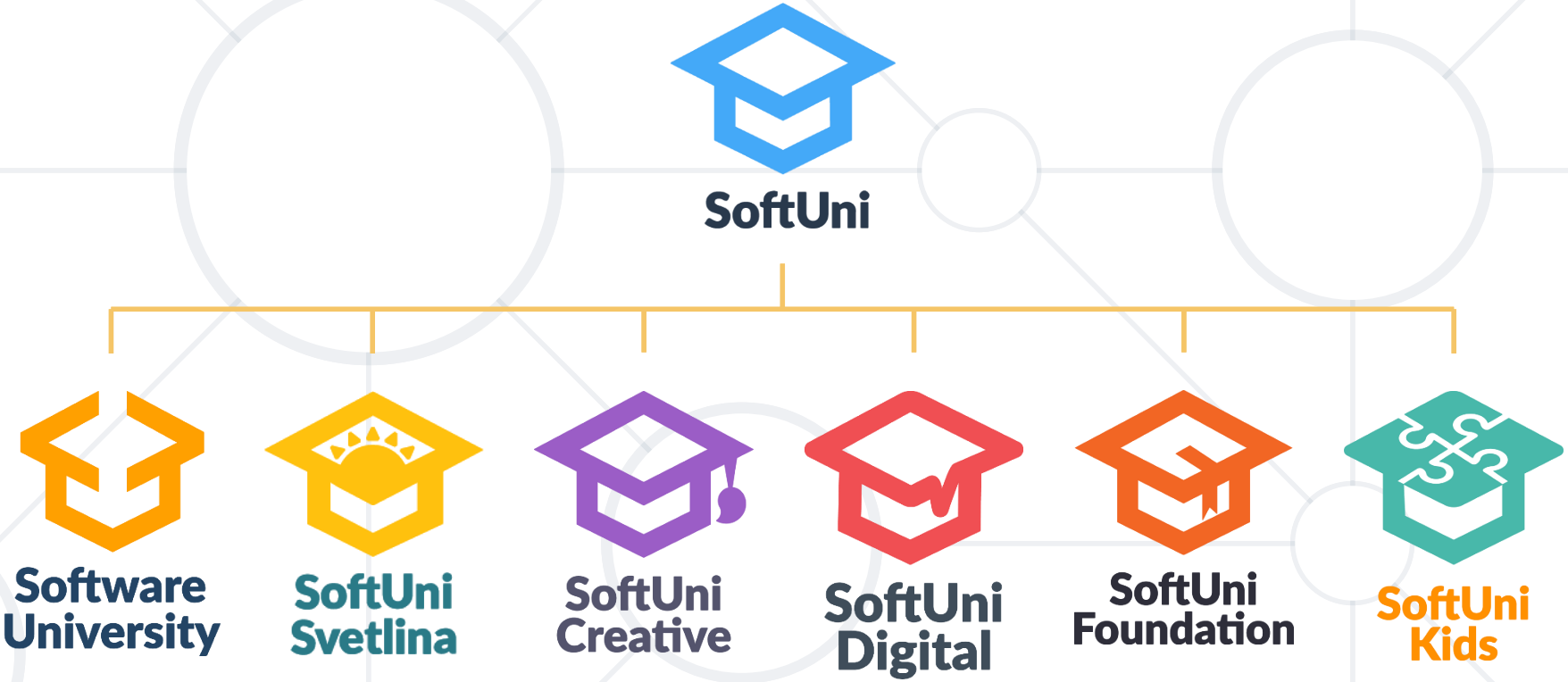
- **Webpack**/Grunt/Gulp **tools** help with the deployment process of our application.
- **Lodash** is fast and reliable **library** which extends how we can work with objects, arrays etc.
- **ESLint** helps you follow the best practices for writing good code.
- **Electron.js** gives the functionality to create **desktop app** using **Javascript**

Questions?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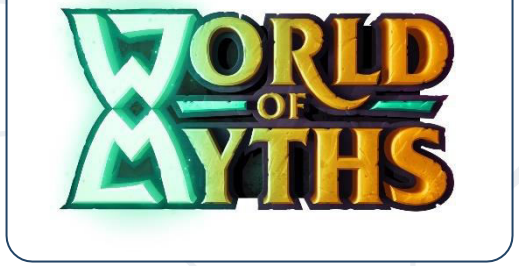

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