



Extending and Reusing the New ONOS GUI2

Sean Condon
Open Networking Foundation

A brief history - ONOS GUI, GUI2 and μ ONOS GUI

ONOS GUI (2015-2017)

AngularJS 1.x based with Java backend - Web Sockets

ONOS GUI2 (2018-)

Angular 7.x based with same Java backend and Web sockets

Divided in to Framework library, Topo Library and main app

μ ONOS GUI (2019-)

Angular 7.x based with Go backend and grpc-web

For onos-config and onos-topo

Reuses Framework library

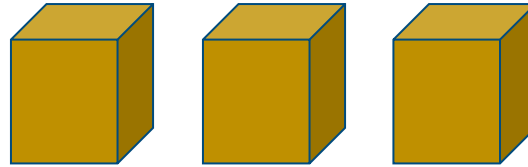
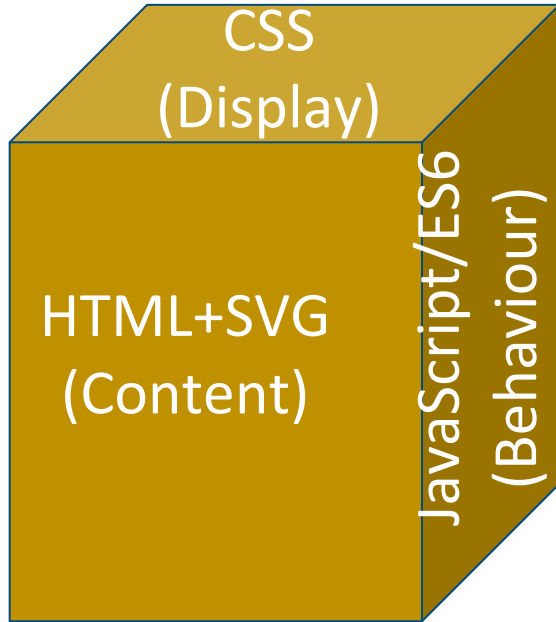
What's new? **Not your old web app stack**

- ECMAScript 6+ (ES6) - 2015
 - Not the Javascript you knew - OO and functional
 - Supported by all modern browsers now
- Typescript - strongly typed extension of ES6+
- Angular 2+ - Google's open source web app platform
- Node JS 10/12, NPM, Bazel

Tooling

- IntelliJ Ultimate Edition or Web Storm
- Atom or MS VS Code
- Angular CLI

Web Development - 3 dimensions



Angular Component is an isolated section of all 3

- TS, CSS and HTML
- @Input() for parameters
- @Output() for events
- Inject services
- Referred to by **selector**
- CSS and dom is isolated

Lots and lots of choice - too much choice?

GUI2 on ONOS is about choosing

- best practice
- consistent approach

Libraries to make reusable

Use Angular structures at top level

- Module is a grouping unit
- Component is the main visual element

Application

Libraries

Modules

Component

Directives

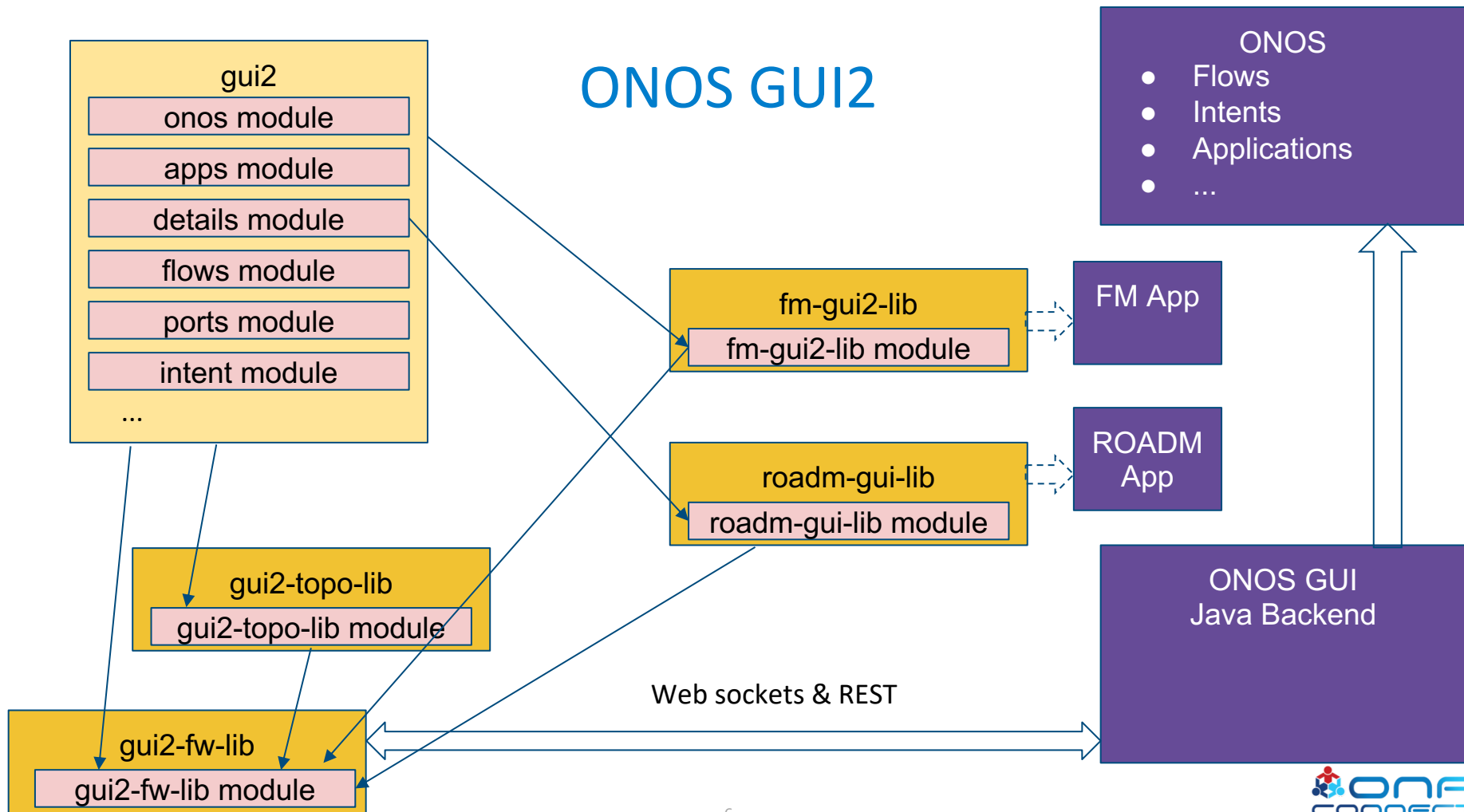
Pipes

Services

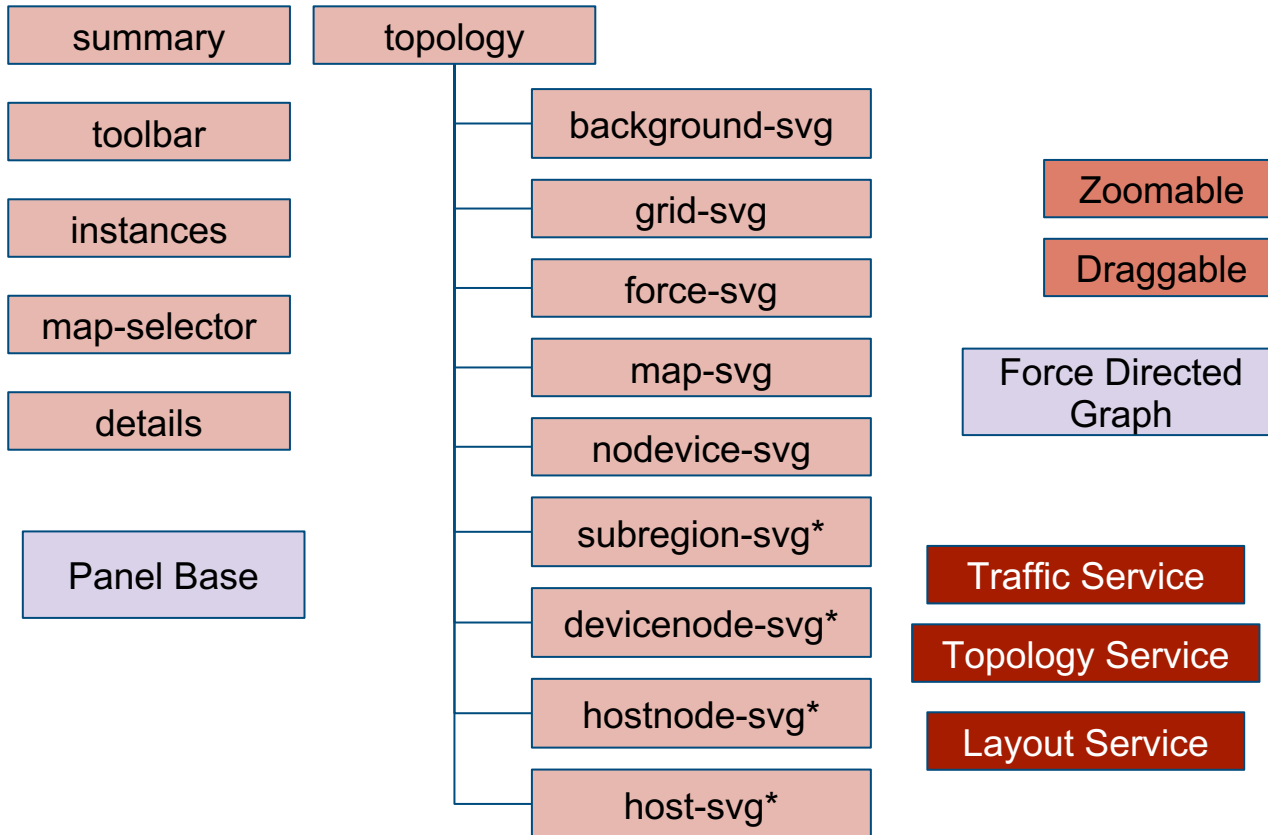
Classes

Functions

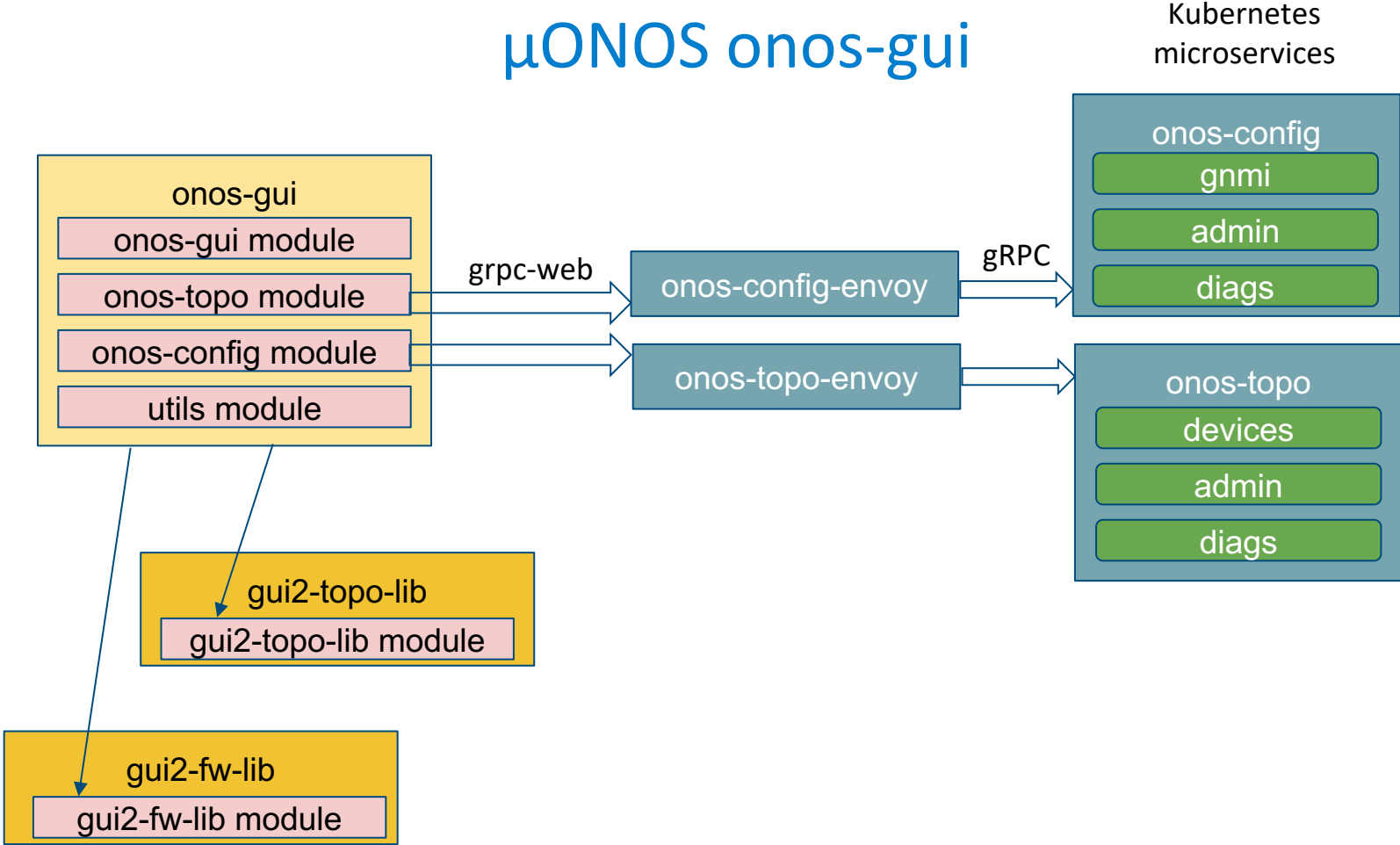
ONOS GUI2



gui2-topo-lib in more detail



μONOS onos-gui



Network Changes

Reuse of mast & navigation

Pending change selected

Previous network changes

Rollback (if existing change selected)

Delete or commit Pending change

Only one config part of this change

Can add more

OnosGui | onos-gui/#/config/nwchanges

onOS Open Network Operating System

Network changes (4 total)

NAME	USER	CREATED	# CHANGES
myPendingChanges	onos	Sep 2, 2019	2
added_a_stratum	User1	Sep 2, 2019	1
a_new_stratum	User1	Sep 2, 2019	1
keen_euler	User1	Sep 2, 2019	1

myPendingChanges

User: onos
Created: Sep 2, 2019, 2:18:20 PM

Changes

Configuration Change
strat1-1.0.0 pending

Other Configs to Add

strat2-1.0.0
device-741375084-1.0.0

Configuration view

Path bar

Layers panel

Config layers

Model plugin driven

Value editor

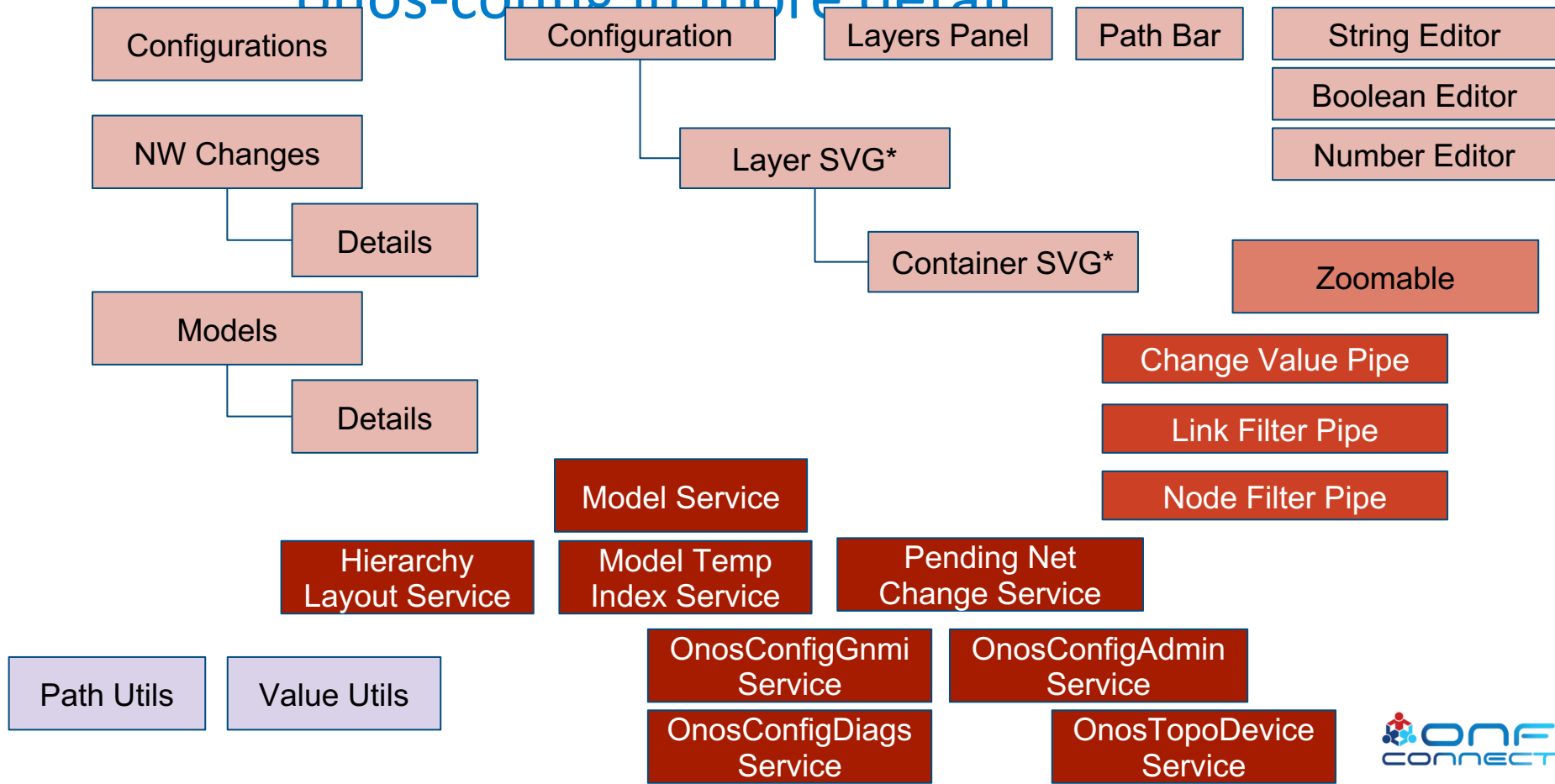
Pending change

Previous Config

RW paths (for adding to config)

The screenshot shows the ONOS Configuration view for a device named 'strat1-1.0.0'. The breadcrumb path is 'interfaces/interface[name=eth1]/config/description'. The left sidebar shows the configuration layers: 'All' (checked), 'None' (unchecked), 'pending' (checked), and 'ReadWrite paths' (checked). The main area displays a tree structure with nodes for 'Interface name=eth1' and 'config'. The 'config' node is expanded to show a list of properties: 'description' (with a pending change indicator), 'name' (value: eth1), 'health-indicator', 'tpid', 'loopback-mode', 'id', 'mtu', 'type', 'enabled', and 'name' (partially visible). A value editor at the top right shows '1st new stratum' with a dropdown arrow. The bottom left shows a breadcrumb path: '/' -> 'Interfaces'.

onos-config in more detail



The screenshot shows the IntelliJ IDEA interface with the following components:

- Project Structure:** Located on the left, it shows a tree view of the project. The path is `gui > src > app > onos-config > config-view > layer-svg`. The file `layer-svg.component.ts` is selected.
- Code Editor:** The main area displays the source code for `layer-svg.component.ts`. It includes an `@Component` decorator with `selector`, `templateUrl`, and `styleUrls`. Below is an `export class LayerSvgComponent implements OnChanges` with several `@Input` and `@Output` annotations, and a `constructor` that injects services like `OnosConfigDiagsService`, `ModelService`, `PendingNetChangeService`, `ModelTempIdx`, and `HierarchyLayoutService`. The constructor also initializes `nodelist` and `updated` properties.
- Annotations:** Blue arrows point from external text labels to specific parts of the code:
 - From "Default layout for component" to the `selector` property in the `@Component` decorator.
 - From "Default layout for service" to the `constructor` method.
 - From "Inputs and Outputs" to the `@Input` and `@Output` annotations.
 - From "Injected services" to the service parameters in the `constructor`.
- Bottom Bar:** Shows the status bar with information like "Frameworks Detected: Angular CLI framework is detected.", "98:59 LF UTF-8 EditorConfig", and "Git: scHierarchyIssues".

Default layout for component

Default layout for service

Inputs and Outputs

Injected services



Angular CLI

```
scondon@pixelbook: ~/go/src/github.com/onosproject/onos
scondon@pixelbook:~/go/src/github.com/onosproject/onos-gui/web/onos-gui$ ng ve
Your global Angular CLI version (8.3.0) is greater than your local
version (7.0.7). The local Angular CLI version is used.

To disable this warning use "ng config -g cli.warnings.versionMismatch false".

Angular CLI
Angular CLI: 7.0.7
Node: 10.16.3
OS: linux x64
```

```
Terminal - scondon@pixelbook: ~/go/src/github.com/onosproject/onos-gui/web/onos-gui/src/app/onos-config
scondon@pixelbook: ~
scondon@pixelbook: ~/go/src/github.com/onosproject/ono...
scondon@pixelbook:~/go/src/github.com/onosproject/onos-gui/web/onos-gui/src/app/onos-config$
ng generate component changes-list
Your global Angular CLI version (8.3.0) is greater than your local
version (7.0.7). The local Angular CLI version is used.

To disable this warning use "ng config -g cli.warnings.versionMismatch false".
CREATE src/app/onos-config/changes-list/changes-list.component.css (0 bytes)
CREATE src/app/onos-config/changes-list/changes-list.component.html (31 bytes)
CREATE src/app/onos-config/changes-list/changes-list.component.spec.ts (664 bytes)
CREATE src/app/onos-config/changes-list/changes-list.component.ts (293 bytes)
UPDATE src/app/onos-config/onos-config.module.ts (3919 bytes)
scondon@pixelbook:~/go/src/github.com/onosproject/onos-gui/web/onos-gui/src/app/onos-config$
```

Demo - get coding

1. Create new component to view changes in table
2. In the TS file add a new `@Input()` for the changeIDs
3. In its constructor add a reference to the `OnosConfigDiagsService`
4. Make call to service, implement callback - local cache. Proto file
5. Look at the `@Component` header - HTML, CSS, Selector
6. Edit the HTML to add a table and bind to data - `*ngFor`
7. Edit the CSS file for the table - border and background
8. Insert the selector for new component in to Layers Panel
9. Run with 'ng serve' to see it in action - Console, Inspect, Network

Demo - make a routed component - instead

10. Add an entry to the routing module
11. Make the entry in to Layers Panel in to a button instead
12. Inject Activated Route to constructor
13. Add ngOnInit to handle parameter
14. Can remove ngOnChanges and the @Input
15. Run and show the routing

Next steps

- Fix all remaining issues on onos-gui
- Update onos-config proto files for continuous updates
- As onos-control is developed migrate topology view to μ ONOS
- Add in full support for onos-topo
- Upgrade to Angular 8
- Move some onos-gui common pieces to gui2-fw-lib

How to Engage with Community

- Join *#micro-onos* channel on *onosproject.slack.com*
- Attend ONOS TST meetings
 - bi-weekly Wednesdays at 9:00 PST/PDT
- Fork and send pull-requests to <https://github.com/onosproject/onos-gui> repositories
- Participate in onos-dev@onosproject.org mailing list
- Questions?
 - email sean@opennetworking.org



Thank You

Follow Up Links:

<https://github.com/opennetworkinglab/onos/blob/master/web/gui2/README.md>

<https://github.com/onosproject/onos-gui>