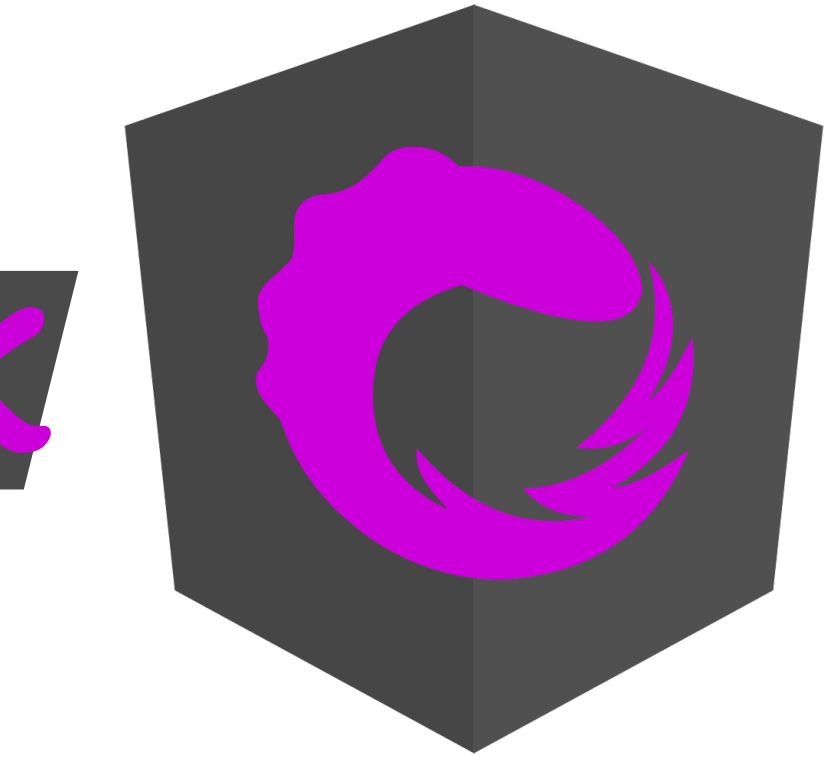
Testing with Mock Store in NgRx v8



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Capital One

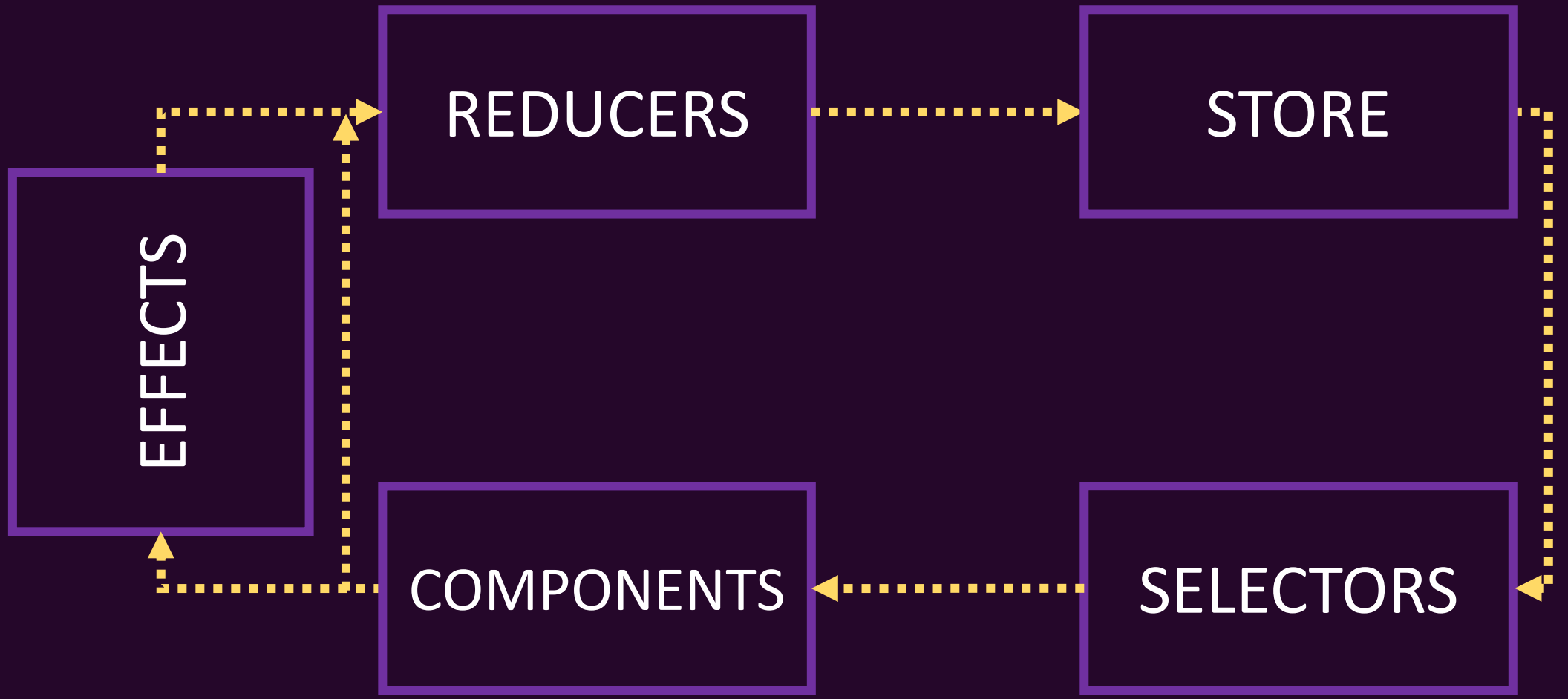
Agenda

- Testing Angular classes that inject the NgRx store

```
export class AngularClass {
  constructor(private store: Store<fromAuth.State>) {}
}
```

- Component Unit Testing in NgRx v6
- Improved Unit Testing with MockStore (v7) & Mock Selectors (v8)

NgRx Data Flow



Unit Testing

Unit Testing Goal:
Condition **mock state** to assert component behavior

Documentation in NgRx v6:

1. Import StoreModule in testing module
2. Dispatch sequence of actions to condition state

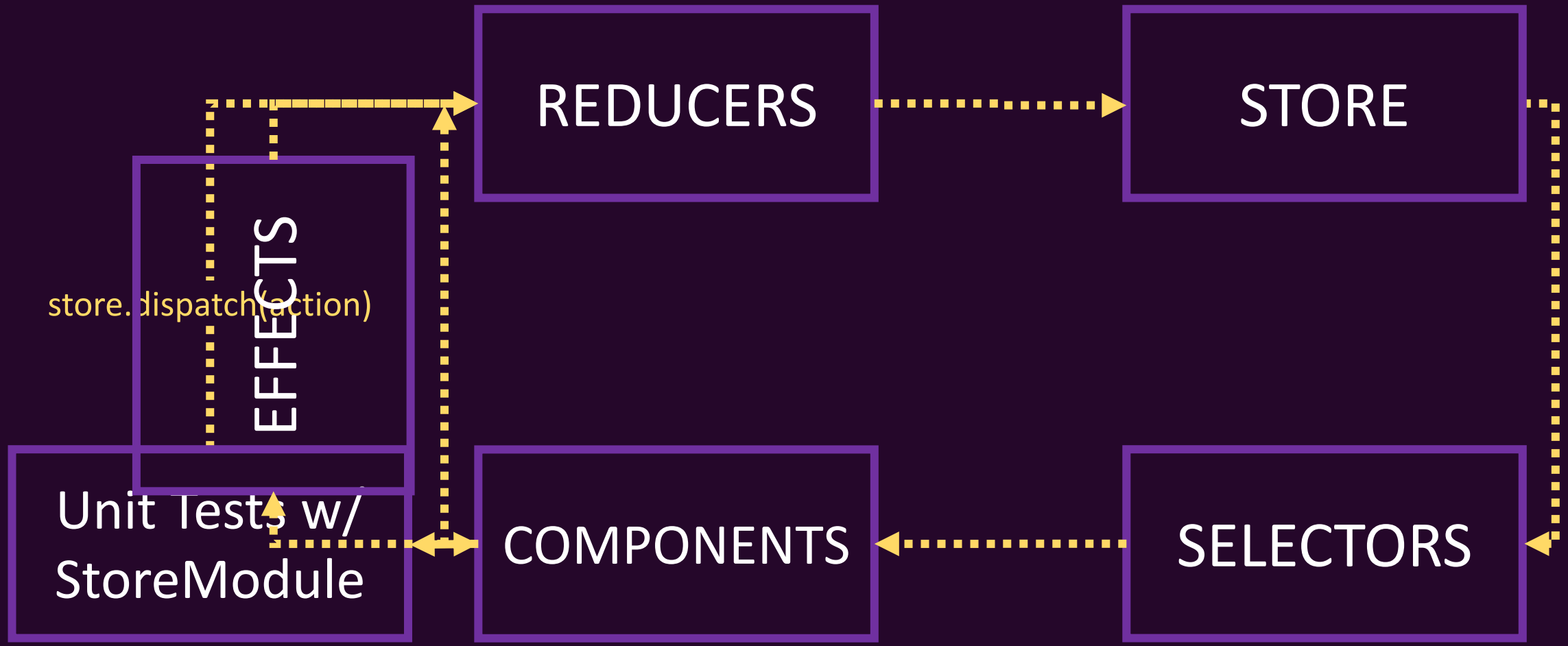
Unit Testing in v6

```
TestBed.configureTestingModule({
  // ...
  imports: [ StoreModule.forRoot({ feature: featureReducer }) ]
  // ...
});

it('should display a list of all items after the data is loaded', () => {
  store.dispatch(new LoadSaleItemsSuccess({ items: [1, 2] }));
  store.dispatch(new LoadClearanceItemsSuccess({ items: [3, 4] }));
  store.dispatch(new LoadNewItemsSuccess({ items: [5, 6] }));
  // ...

  component.allItems$.subscribe(allItems =>
    expect(allItems.length).toBe(6)
  );
});
```

Unit Testing in v6



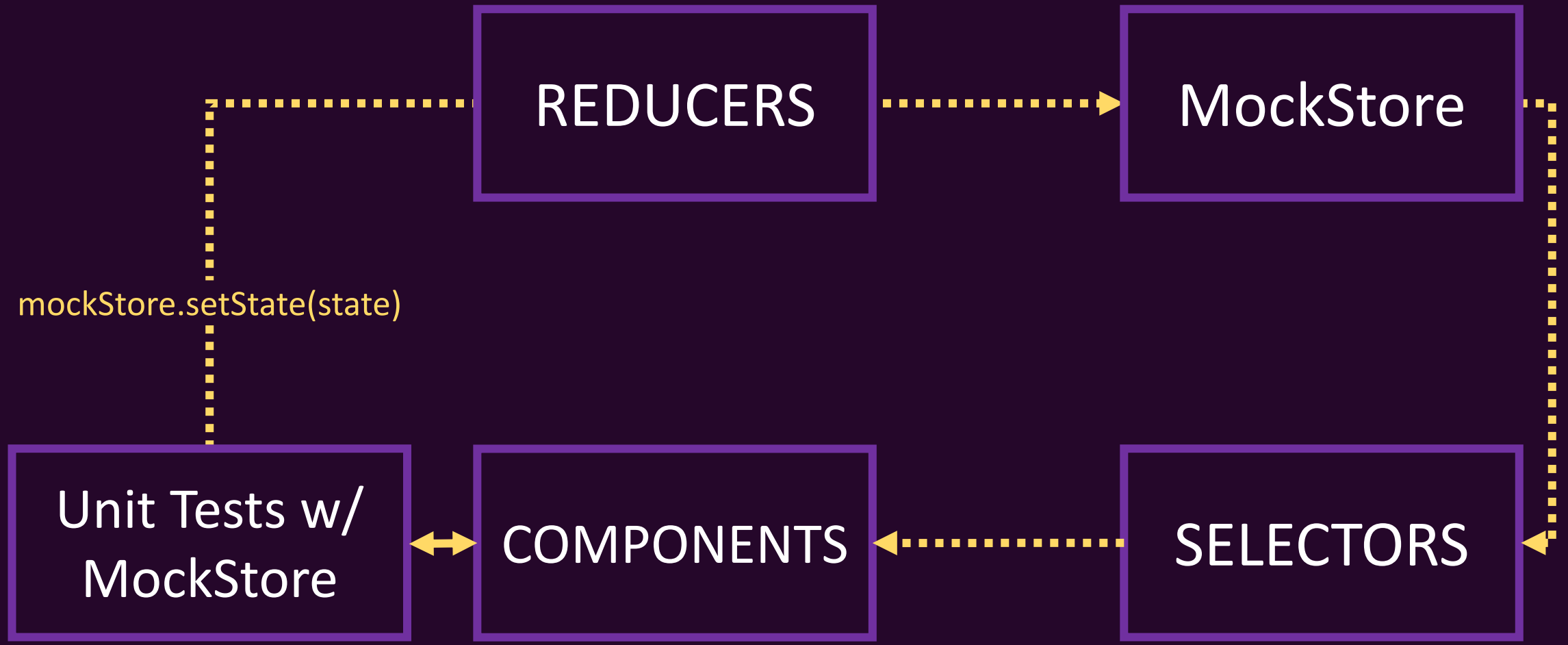
Unit Testing in v6

Wanted:
Simple way to mock the NgRx Store

import { MockStore } from '@ngrx/store/testing';

- Directly condition a given mock state to test against
- Selectors automatically trigger
- Conditioning steps:
  1. Provide provideMockStore({ initialState }) in testing module
  2. Update state with mockStore.setState(state)

Unit Testing with MockStore



Unit Testing with MockStore

```
import { provideMockStore, MockStore }
  from '@ngrx/store/testing';
  // ...
  let mockStore: MockStore<fromItems.State>;
  const initialState = {
    items: {
      saleItems: [],
      clearanceItems: [],
      newItems: []
    }
  } as fromItems.State;

  beforeEach(() => {
    TestBed.configureTestingModule({
      // ...
      providers: [
        provideMockStore({ initialState })
      ]
    });

    mockStore = TestBed.get(Store);
    // ...
  });
```

```
it('should display a list of all items'
  + ' after data is loaded', () => {

  component.allItems$.subscribe(allItems =>
    expect(allItems.length).toBe(0)
  );

  // ...
  const loadedState = {
    items: {
      saleItems: [1, 2],
      clearanceItems: [3, 4],
      newItems: [5, 6]
    }
  } as fromItems.State;

  mockStore.setState(loadedState);

  component.allItems$.subscribe(allItems =>
    expect(allItems.length).toBe(6)
  );
});
```

ANGULAR DENVER

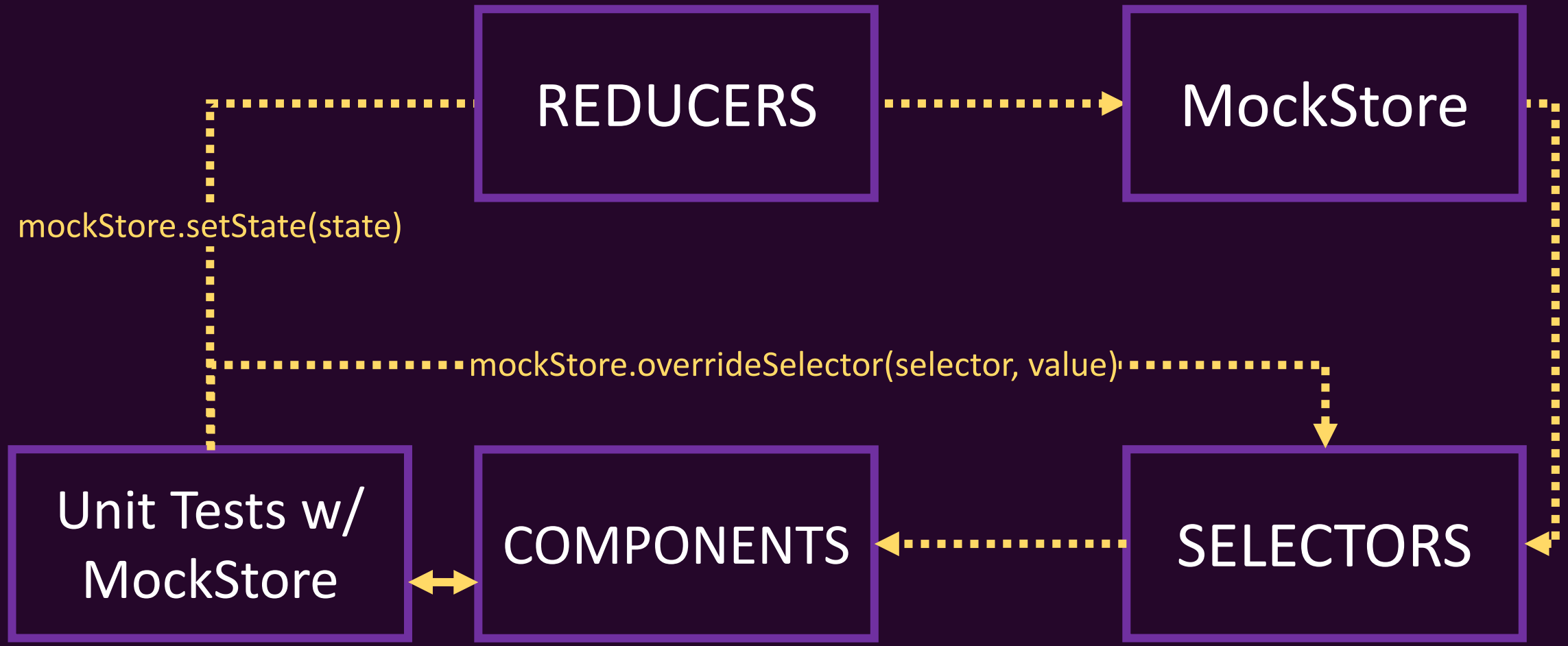
Mock Selectors

- Condition a mock selector without mocking the entire state
- Test complexity does not increase with selector complexity:

```
export const selectAllItems = createSelector(
  selectSaleItems,
  selectClearanceItems,
  selectNewItems,
  (saleItems, clearanceItems, newItems) =>
    [...saleItems, ...clearanceItems, ...newItems]
);
```

- Conditioning steps:
  1. Provide provideMockStore() in testing module
  2. Mock selectors with mockStore.overrideSelector(selector, val)

Unit Testing with Mock Selectors



Unit Testing with Mock Selectors

```
import { provideMockStore, MockStore }
  from '@ngrx/store/testing';
  // ...
  let mockStore: MockStore<fromItems.State>;

  beforeEach(() => {
    TestBed.configureTestingModule({
      // ...
      providers: [
        provideMockStore()
      ]
    });

    mockStore = TestBed.get(Store);
    mockStore.overrideSelector(
      fromItems.selectAllItems,
      []
    );
    // ...
  });
```

```
it('should display a list of all items'
  + ' after data is loaded', () => {

  component.allItems$.subscribe(allItems =>
    expect(allItems.length).toBe(0)
  );

  // ...
  mockStore.overrideSelector(
    fromItems.selectAllItems,
    [1, 2, 3, 4, 5, 6]
  );

  triggerStateChange()

  component.allItems$.subscribe(allItems =>
    expect(allItems.length).toBe(6)
  );
});
```

Why Should I Use…

StoreModule

- Integration testing

MockStore

- Triggers state change automatically
- Grouping test case state together can be more readable

Mock Selectors

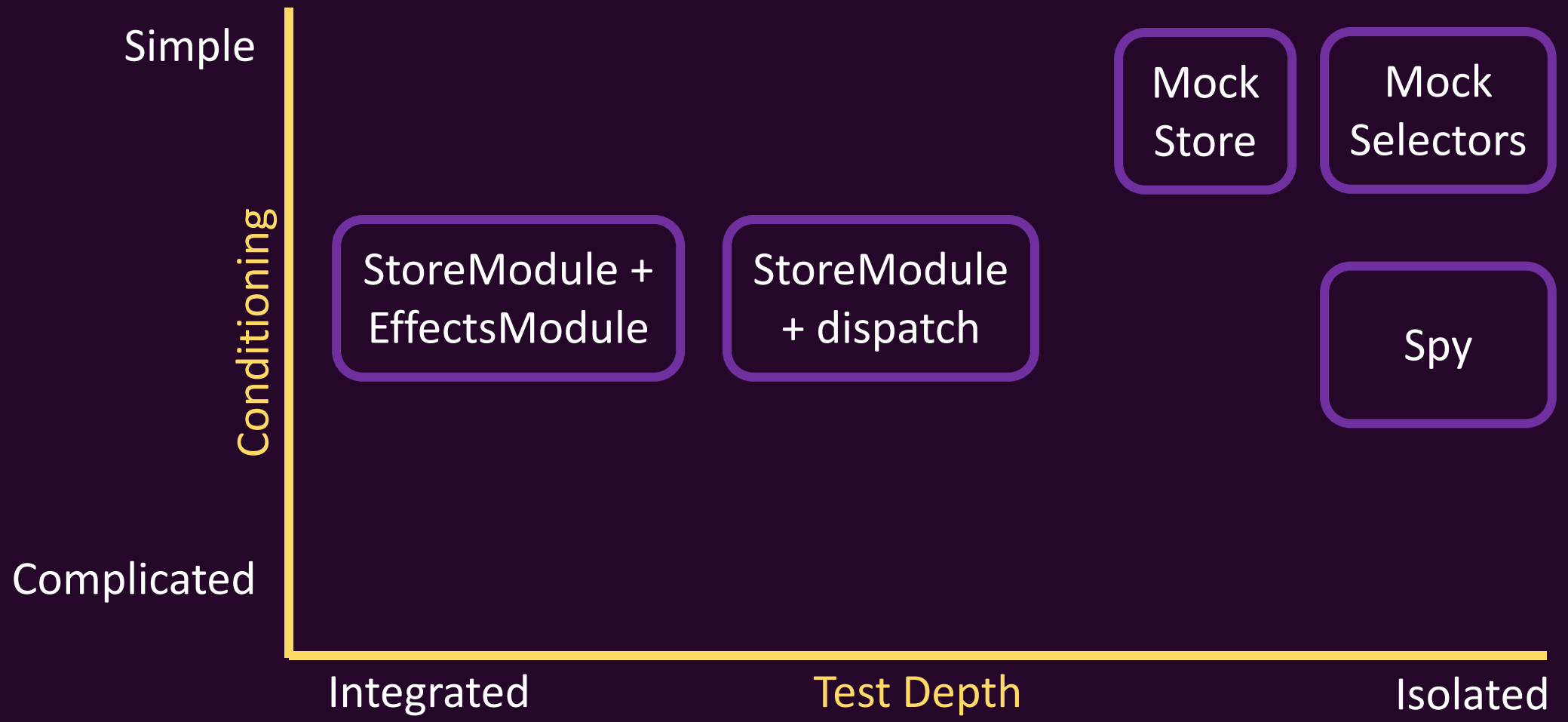
- Most isolated
- Only mock what you need
- Eliminates selector complexity

References & Thanks

- https://ngrx.io/guide/store/testing
- https://ngrx.io/guide/schematics/container
- https://JohnCrowson.com/assets/angular-denver.pdf
- NgRx Team
- Questions?
  - @john_crowson

Appendix

Conclusion


Simple
Conditioning
Complicated
StoreModule + EffectsModule
StoreModule + dispatch
Mock Store
Mock Selectors
Spy
Integrated
Test Depth
Isolated

Selector Support

```
this.store.select('orders');

this.store.select(fromOrders.getOrders);

this.store.pipe(select('orders'));

this.store.pipe(select(fromOrders.getOrders));
```

Global

provideMockStore({ initialState, selectors })

- Setup MockStore in tests

MockStore

setState(nextState)

- Set state for MockStore

overrideSelector(selector, value): MemoizedSelector

- Override selector with mocked value

resetSelectors()

- Reset overridden selectors

scannedActions$: Observable<Action>

- Get actions dispatched to MockStore

MemoizedSelector

setResult(value)

- Update overridden selector's mock value