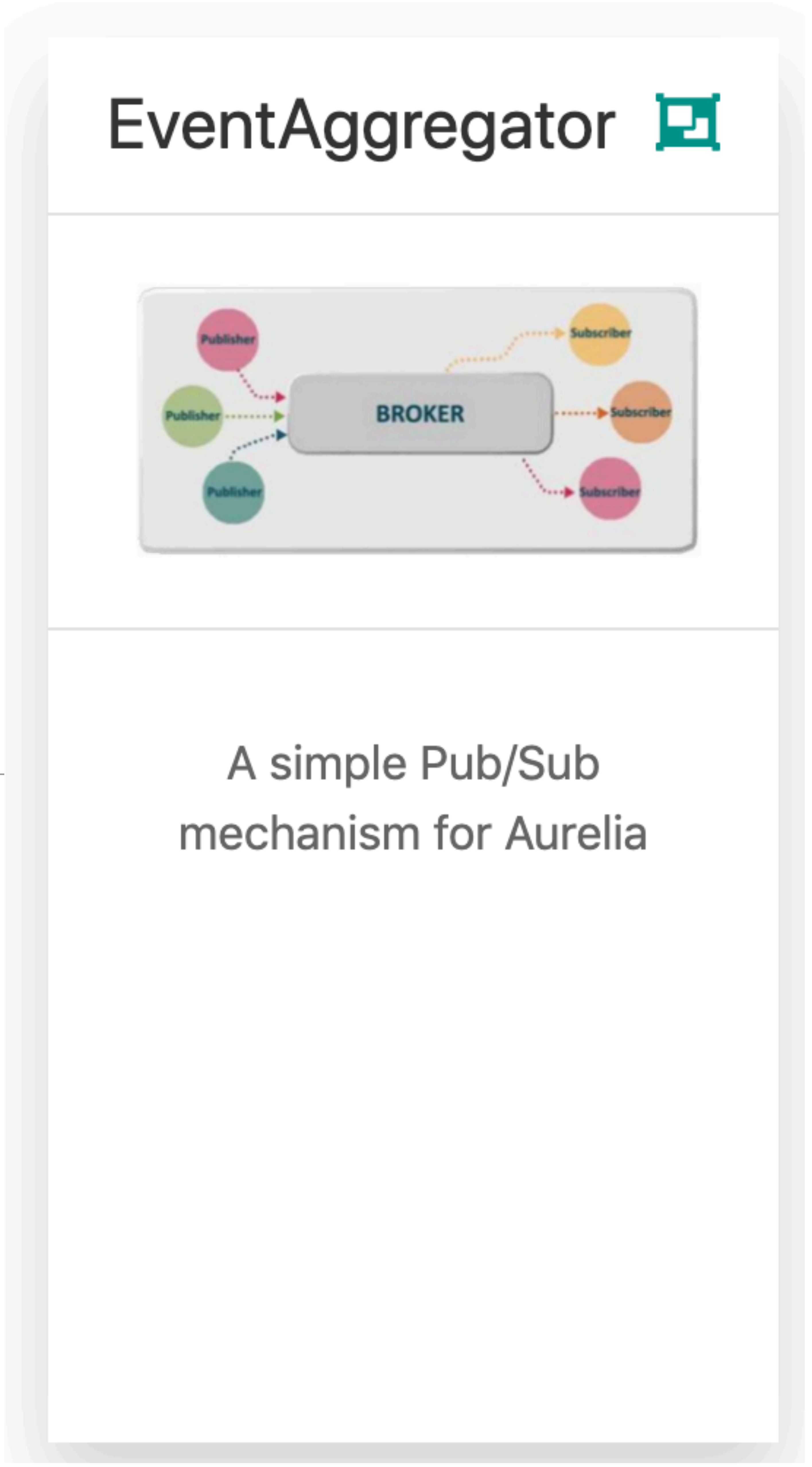
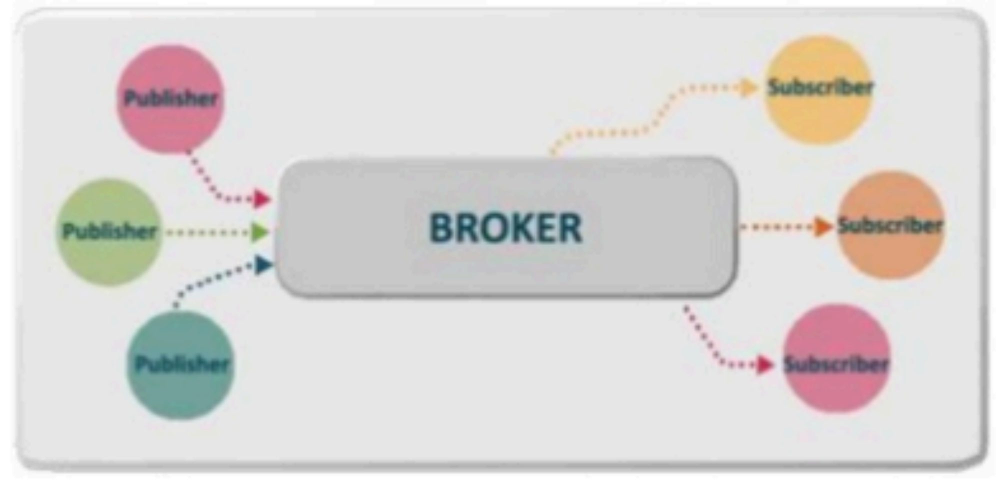
Event Aggregation



EventAggregator

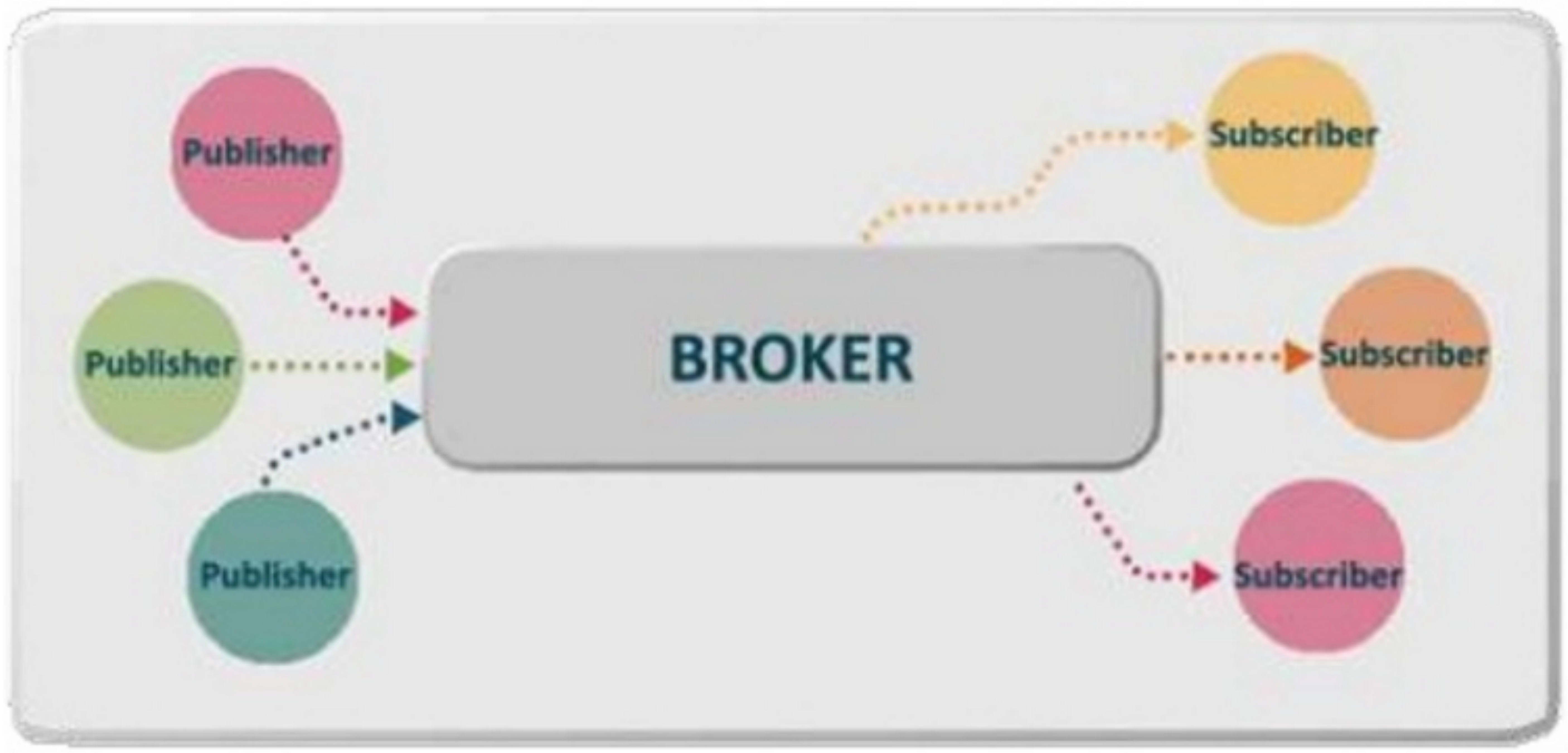


A simple Pub/Sub mechanism for Aurelia

Events

- Many diverse components generate events
- These events may incur changes in model that need to be reflected in other components
- Unstructured co-ordination between components may yield unmanageable complexity

Publish Subscribe Messaging (Pub/Sub)



- Facilitate decoupled messaging between components
- Promote a more ordered evolution of dependencies

Aurelia Event Aggregator

A lightweight pub/sub messaging system for app-wide loosely coupled events.

- Message
- Broker (the EventAggregator)
- Publisher
- Subscriber
- Publish Method
- Subscribe Method
- Subscribe Once Method
- Channels

Message

- This is the 'Event' that can be transmitted through the EventAggregator

- It can be any class that meaningfully encapsulates information about the event.

- Often defined in a 'messages.js' module

```
export class ExampleEvent {
  message: string;
  constructor(message: ) {
    this.message = message;
  }
}
```

Broker (EventAggregator) + Publisher

- EventAggregator object imported from framework…
- … and ‘injected’ into publisher object

```
import {inject} from 'aurelia-dependency-injection';
import {EventAggregator} from 'aurelia-event-aggregator';
import {ExampleEvent} from './example-event';

@inject(EventAggregator)
export class ExamplePublisher {

  constructor(private ea: eventAggregator) {}

 ...
}
```

Broker (EventAggregator) + Subscriber

```
import {inject} from 'aurelia-dependency-injection';
import {EventAggregator} from 'aurelia-event-aggregator';
import {ExampleEvent} from './example-event';

@inject(EventAggregator)
export class ExampleSubscriber {

  constructor(private ea: eventAggregator) {}

 ...
}
```

- Publisher & Subscriber share ExampleEvent class

Publish Method

- Create event object and dispatch to all subscribers

```
import {inject} from 'aurelia-dependency-injection';
import {EventAggregator} from 'aurelia-event-aggregator';
import {ExampleEvent} from './example-event';

@inject(EventAggregator)
export class ExamplePublisher {

  constructor(private ea: eventAggregator) {}

  publish() {
    this.ea.publish(new ExampleEvent('Some Event'));
  }
}
```

Subscribe Method

- Subscribe to events - callback triggered when event occurs

```
import {inject} from 'aurelia-dependency-injection';
import {EventAggregator} from 'aurelia-event-aggregator';
import {ExampleEvent} from './example-event';

@inject(EventAggregator)
export class ExampleSubscriber {
  constructor(private ea: eventAggregator) {}

  subscribe() {
    ea.subscribe(ExampleEvent, event => {
      console.log(event.message);
    });
  }
}
```

SubscribeOnce Method

- Subscribe for first occurrence of event only

```
import {inject} from 'aurelia-dependency-injection';
import {EventAggregator} from 'aurelia-event-aggregator';
import {ExampleEvent} from './example-event';

@inject(EventAggregator)
export class ExampleSubscriber {
  constructor(private ea: eventAggregator) {}

  subscribe() {
    ea.subscribeOnce(ExampleEvent, event => {
      console.log(event.message);
    });
  }
}
```

Channels

- Alternative pub/sub mechanism - named channels

Publisher

```
import {inject} from 'aurelia-framework';
import {EventAggregator} from 'aurelia-event-aggregator';

@inject(EventAggregator)
export class APublisher {
  constructor(private ea: eventAggregator) {}

  publish(){
    var payload = {};
    this.eventAggregator.publish('channel name here', payload);
  }
}
```

Subscriber

```
import {inject} from 'aurelia-framework';
import {EventAggregator} from 'aurelia-event-aggregator';

@inject(EventAggregator)
export class ASubscriber {
  constructor(private ea: eventAggregator) {}

  subscribe() {
    this.eventAggregator.subscribe('channel name here', payload => {
      ...
    });
  }
}
```

Example: Donation Total

- Publisher

donation-service.js

```
@inject(HttpClient, EventAggregator)
export class DonationService {

  candidates: Candidate[] = [];
  donations: Donation[] = [];
  paymentMethods = ['Cash', 'Paypal'];
  total = 0;

  constructor(private httpClient: HttpClient, private ea: EventAggregator) {}

  async donate(amount: number, method: string, candidate: Candidate) {
    const donation = {
      amount: amount,
      method: method,
      candidate: candidate
    };
    this.donations.push(donation);
    this.total = this.total + amount;
    this.ea.publish(new TotalUpdate(this.total));
    console.log('Total so far ' + this.total);
  }
}
```

```
export class TotalUpdate {
  total: number;
  constructor(total: number) {
    this.total = total;
  }
}
```

messages.js

Example: Donation Total

- Subscriber

stats.html

```html
<template>

  <section class="ui stacked statistic segment">
    <div class="value">
      ${total}
    </div>
    <div class="label">
      Donated
    </div>
  </section>

</template>
```

stats.js

```js
@inject(DonationService, EventAggregator)
export class TotalDonated {
  total = 0;

  constructor(private ds: DonationService, private ea: EventAggregator) {
    this.total = ds.total;
    ea.subscribe(TotalUpdate, msg => {
      this.total = msg.total;
    });
  }
}
```