Combining All the Streams



Deborah Kurata

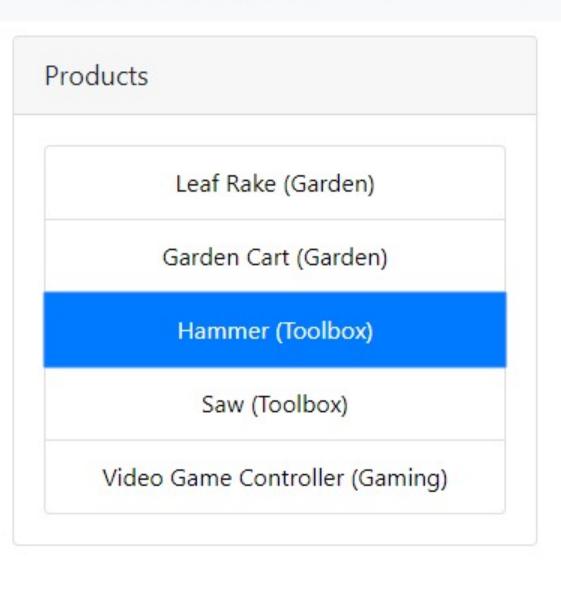
Consultant | Speaker | Author | MVP | GDE

@deborahkurata



Multiple Data Sources

Acme Product Management Home Product List Product List (Alternate UI)



Product Detail for: Hammer

Name: Hammer
Code: TBX-0048
Category: Toolbox

Description: Curved claw steel hammer

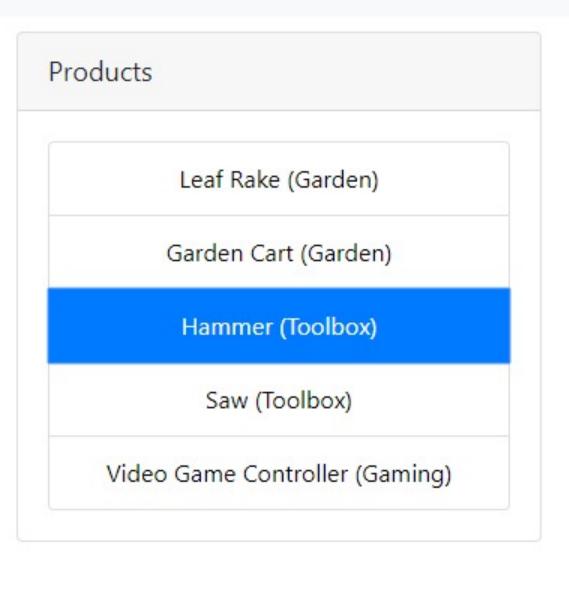
Price: \$13.35

In Stock: 8

| Supplier | Cost | Minimum Quantity | |
|---------------------|--------|------------------|--|
| Acme General Supply | \$2.00 | 24 | |
| Acme Tool Supply | \$4.00 | 12 | |

Creating Ancillary Streams

Acme Product Management Home Product List Product List (Alternate UI)



| rroduct Dett | ail for: Hammer | | |
|-------------------|-------------------|--------|------------------|
| Name: | Hammer | | |
| Code: | TBX-0048 | | |
| Category: Toolbox | | | |
| Description: | Curved claw steel | hammer | |
| Price: | \$13.35 | | |
| In Stock: | 8 | | |
| Supplier | | Cost | Minimum Quantity |
| Acme Gener | al Supply | \$2.00 | 24 |
| Acme Tool Supply | | | |



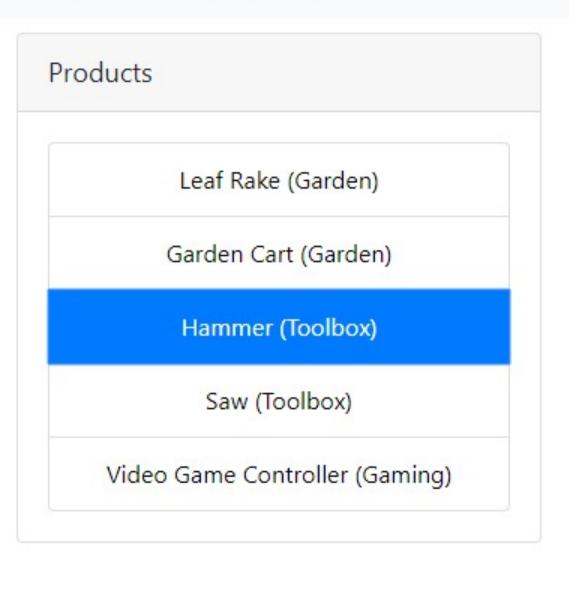
Module Overview



Handling related data
Creating ancillary streams
Combining all the streams

Related Data Streams

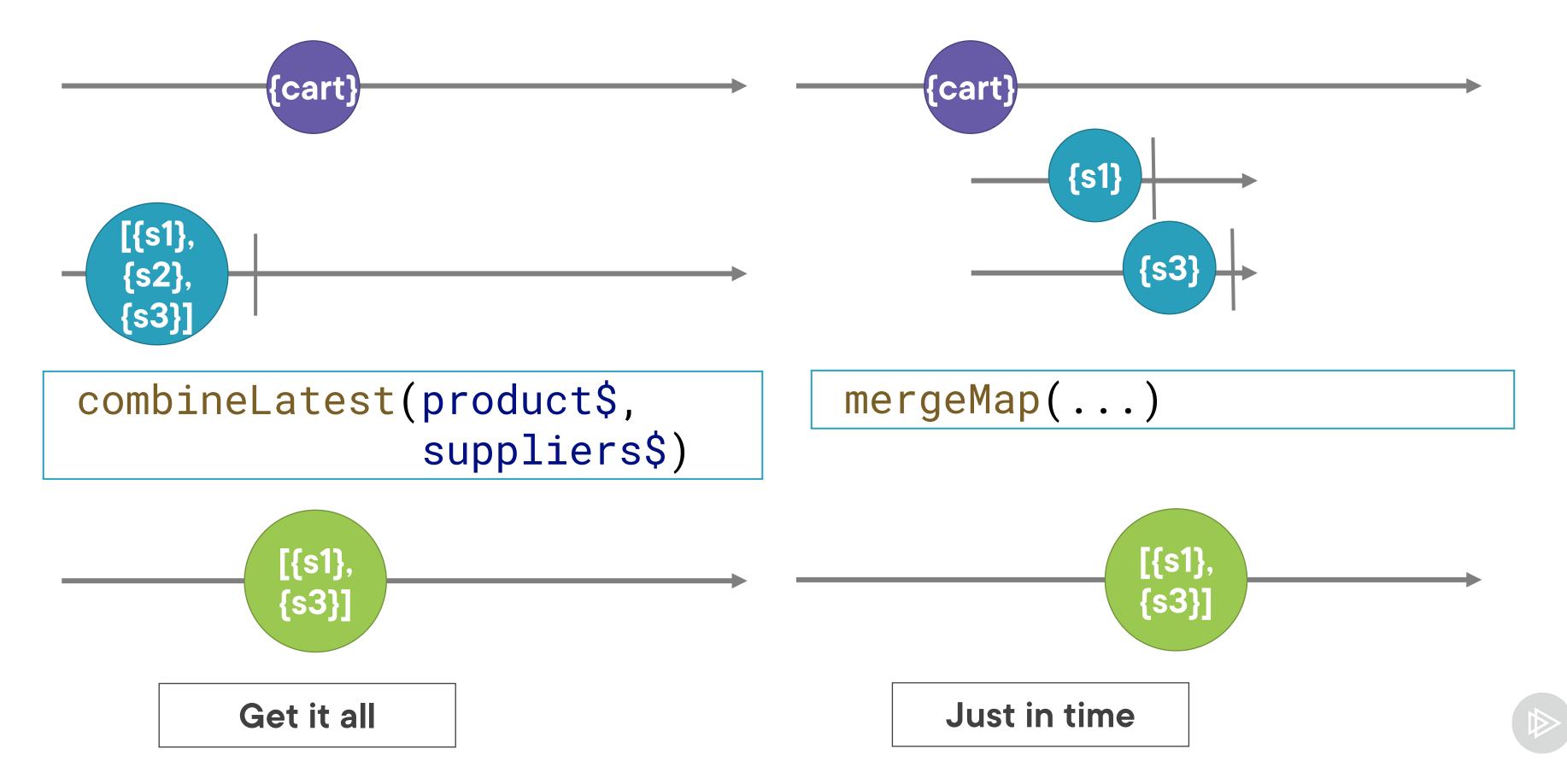
Acme Product Management Home Product List Product List (Alternate UI)



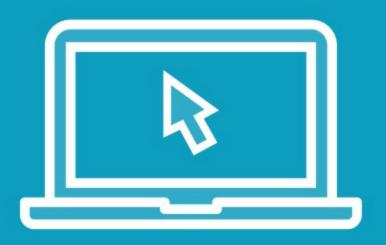
| Acme Gener | al Supply | \$2.00 | 24 | | |
|---|-----------|--------|------------------|--|--|
| Supplier | | Cost | Minimum Quantity | | |
| In Stock: | 8 | | | | |
| Description: Curved claw steel Price: \$13.35 | | | | | |
| | | hammer | | | |
| Category: | Toolbox | | | | |
| Code: | TBX-0048 | | | | |
| Name: | Hammer | | | | |



Related Data Streams



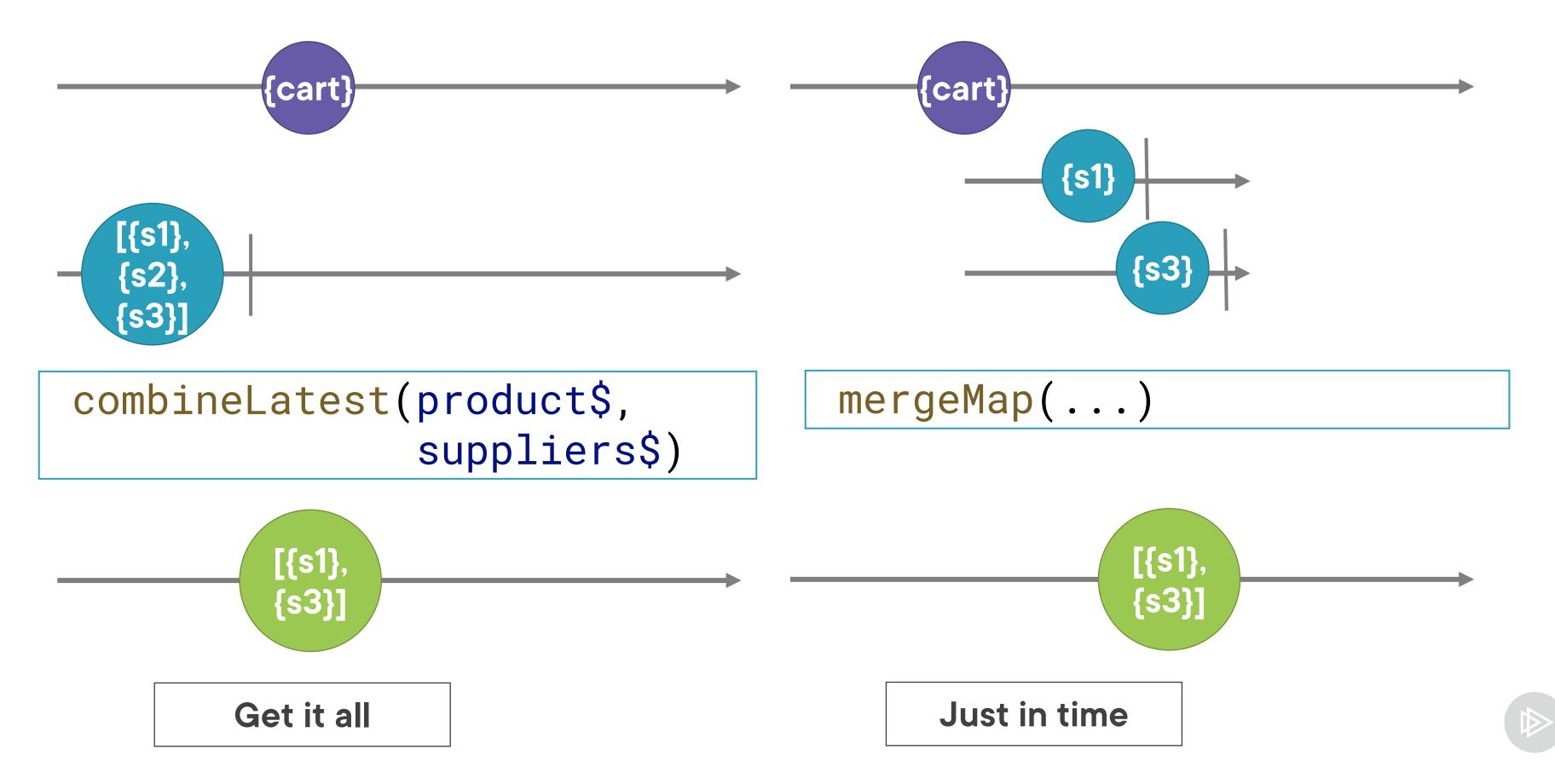
Demo



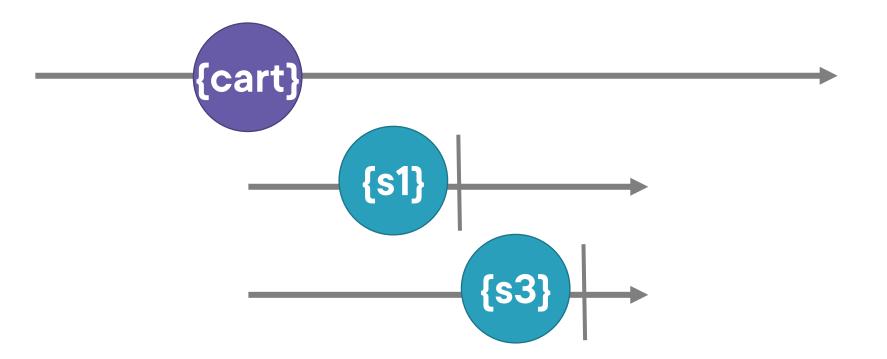
Related data streams: get it all

- Define an Observable that emits an array of all data from the related data source
- Use that Observable to find the related items

Related Data Streams



```
export interface Product {
  id: number;
  productName: string;
  productCode?: string;
  description?: string;
  price?: number;
  categoryId?: number;
  category?: string;
  quantityInStock?: number;
  searchKey?: string[];
  supplierIds?: number[];
```

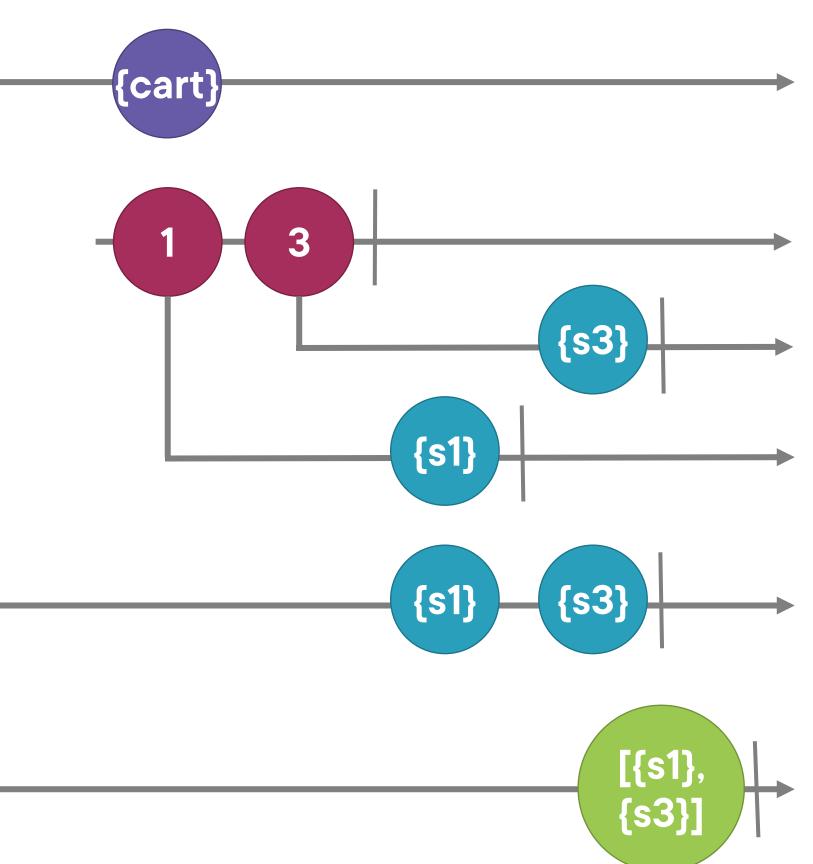


```
supplierWithMergeMap$ = of(1, 5, 8)
  .pipe(
   mergeMap(supplierId => this.http.get<Supplier>(`${this.url}/${supplierId}`))
);
```

```
selectedProductSuppliers$ = this.selectedProduct$
.pipe(
    switchMap(product =>
        from(product.supplierIds)
        .pipe(
        mergeMap(supplierId => this.http.get<Supplier>(`${this.url}/${supplierId}`)),
        toArray()
)));
```

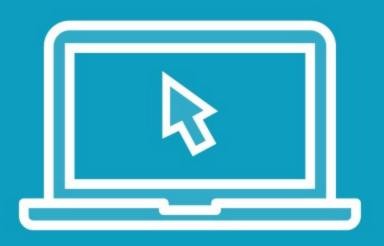
```
this.selectedProduct$
.pipe(
    switchMap(product =>
        from(product.supplierIds)
        .pipe(
        mergeMap(supplierId =>
             this.http.get<Supplier>(...)),
        toArray()
)));
```

```
this.selectedProduct$
 .pipe(
   switchMap(product =>
    from(product.supplierIds)
     .pipe(
       mergeMap(supplierId =>
         this.http.get<Supplier>(...)),
       toArray()
 )));
```



```
selectedProductSuppliers$ = this.selectedProduct$
.pipe(
    switchMap(product => from(product.supplierIds)
        .pipe(
        mergeMap(supplierId => this.http.get<Supplier>(`${this.url}/${supplierId}`)),
        toArray()
)));
```

Demo



Related data streams: just in time



Related Data Streams

Get It All

Declarative pattern

Combine streams

Displays instantly

Gets all data

Just in Time

More complex code

Higher-order mapping operators

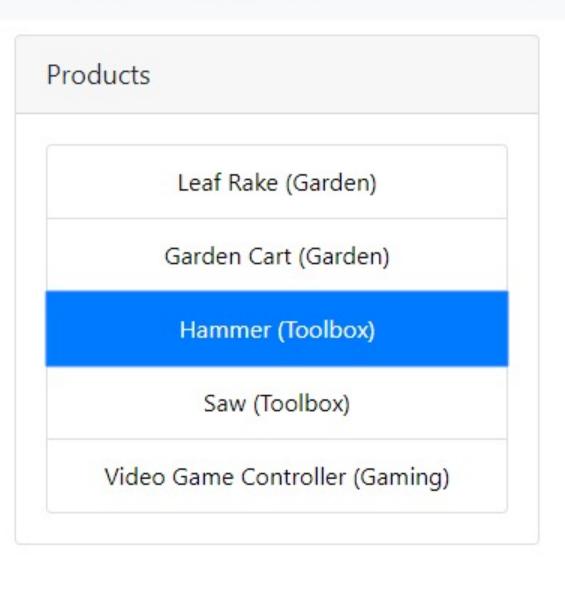
Display delay

Only retrieves required data



Defining Ancillary Streams

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Defining Ancillary Streams

```
pageTitle$ = this.product$
  .pipe(
   map(p => p ? `Product Detail for: ${p.productName}` : null)
);
```

Multiple Async Pipes

```
<div *ngIf="product$ | async as product">
```

```
<div *ngIf="productSuppliers$ | async as productSuppliers">
```

```
<div *ngIf="pageTitle$ | async as pageTitle">
    {{pageTitle}}
    </div>
```

```
<div *ngIf="vm$ | async as vm">
```

RxJS Checklist: Related Data Streams



Get it all

Just in time



RxJS Checklist: Get It All



Define an Observable that emits an array of all data from the related data source

```
suppliers$ = this.http.get<Supplier[]>(this.suppliersUrl)
.pipe(
    shareReplay(1),
    catchError(this.handleError)
);
```

Use that Observable to filter and find the related items for display

```
selectedProductSuppliers$ = combineLatest([
    this.selectedProduct$,
    this.supplierService.suppliers$
]).pipe(
    map(([selectedProduct, suppliers]) =>
        suppliers.filter(supplier =>
            selectedProduct?.supplierIds?.includes(supplier.id))
    )
    );
```

RxJS Checklist: Just in Time



Define a higher-order Observable to map each item to an Observable that emits the data related to that item

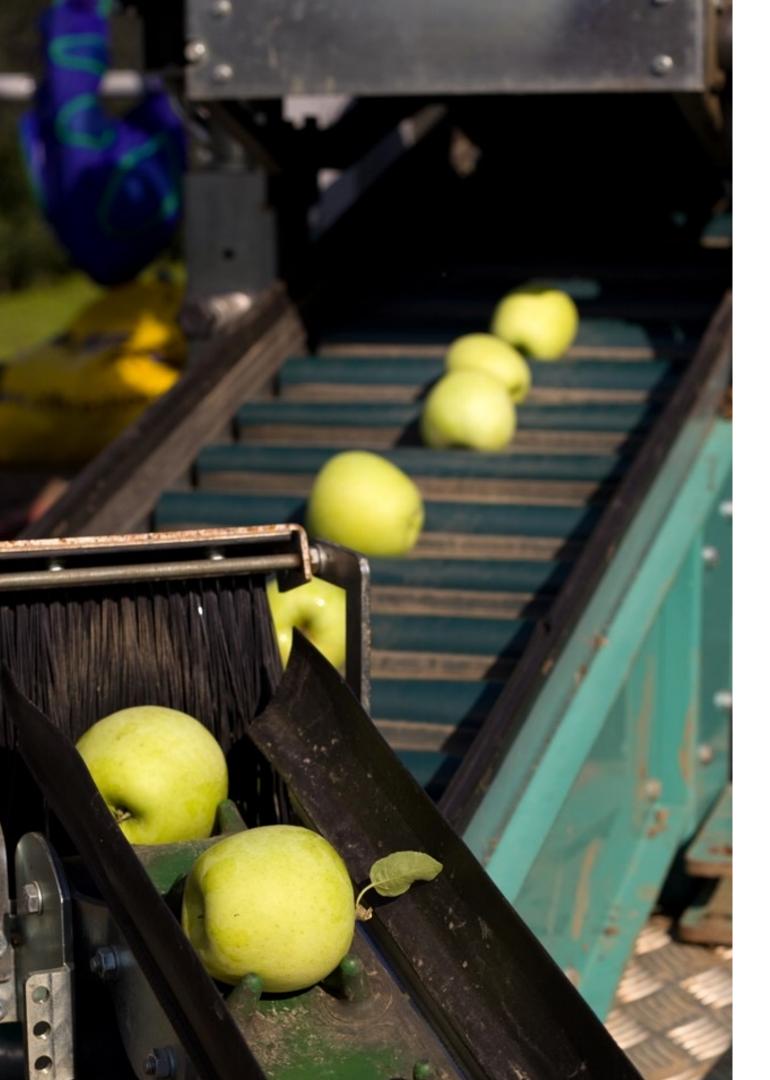
Merge the emissions into a single array for display

RxJS Checklist: Combining All the Streams



```
vm$ = combineLatest([
  this.product$,
  this.productSuppliers$,
  this.pageTitle$
])
  .pipe(
    map(([product, productSuppliers, pageTitle]) =>
        ({ product, productSuppliers, pageTitle }))
  );
```

```
<div *ngIf="vm$ | async as vm">
```



Coming up next...

Tips and Recap