



The Digital Transformation for Argos Search and Browse

Chris Crispin, Software Development Engineer

Argos

01/03/2017

ABOUT ME

UNIVERSITY OF
Southampton

Aeronautics &
Astronautics

Computational
Engineering
Design MEng

Complex
Systems
Simulation
PhD

Software
Development
Engineer





BUILDING THE FUTURE OF
RETAIL

ARGOS

800+
STORES

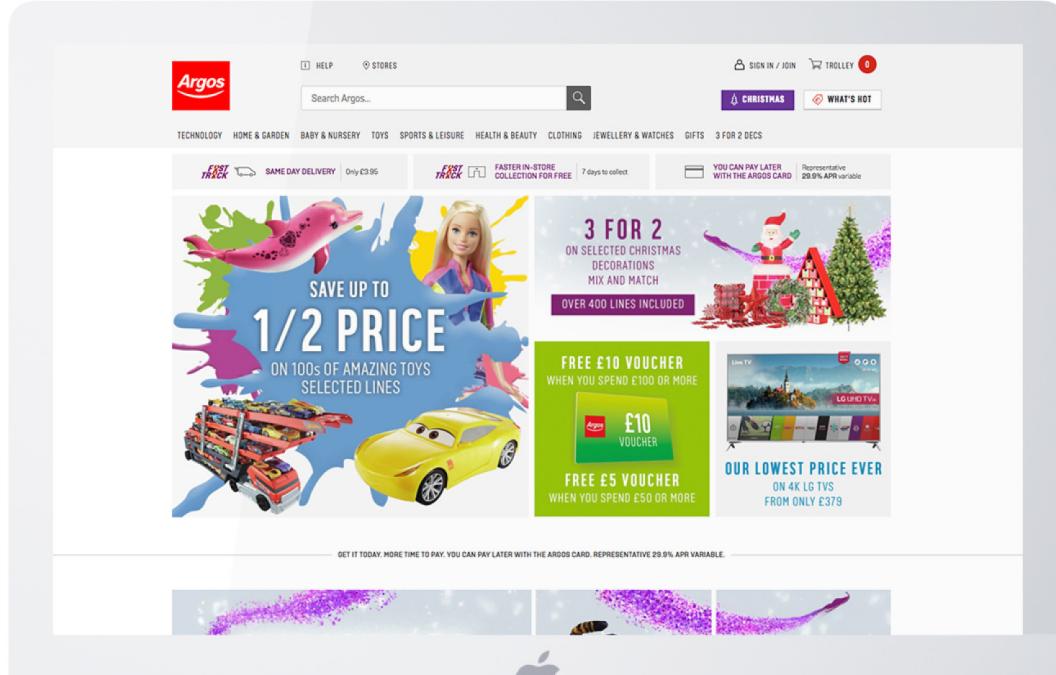
29m
STORE
CUSTOMERS

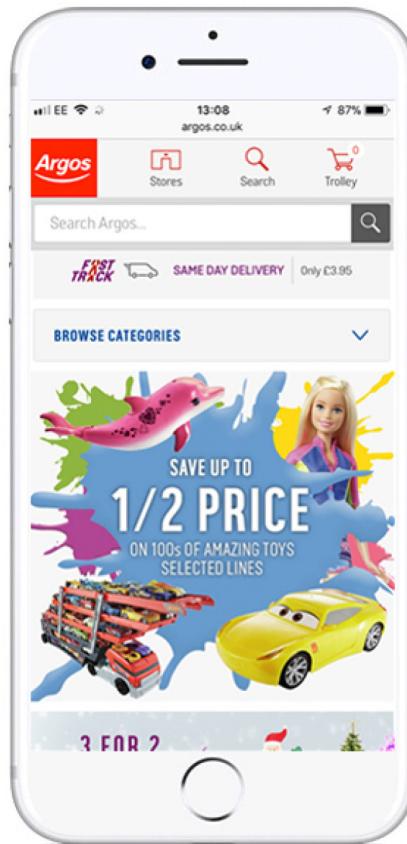
1bn
ONLINE
VISITS

60,000
PRODUCTS

#1 UK
MULTI-CHANNEL
RETAILER









JUST THE
TIP OF THE
ICEBERG

3 FOR 3
ON ALL TOYS

FROM THE RANGE
AT ARGOS.CO.UK

Cheapest item free
Terms and conditions apply

1 hour
800,000 VISITORS

13,000
CUSTOMERS
PER MINUTE

84%
MOBILE

2m
VISITS IN
4 HOURS



EXAMPLE PROCESS



BUILD

NONBUY

BUILDING THE FUTURE
OF RETAIL

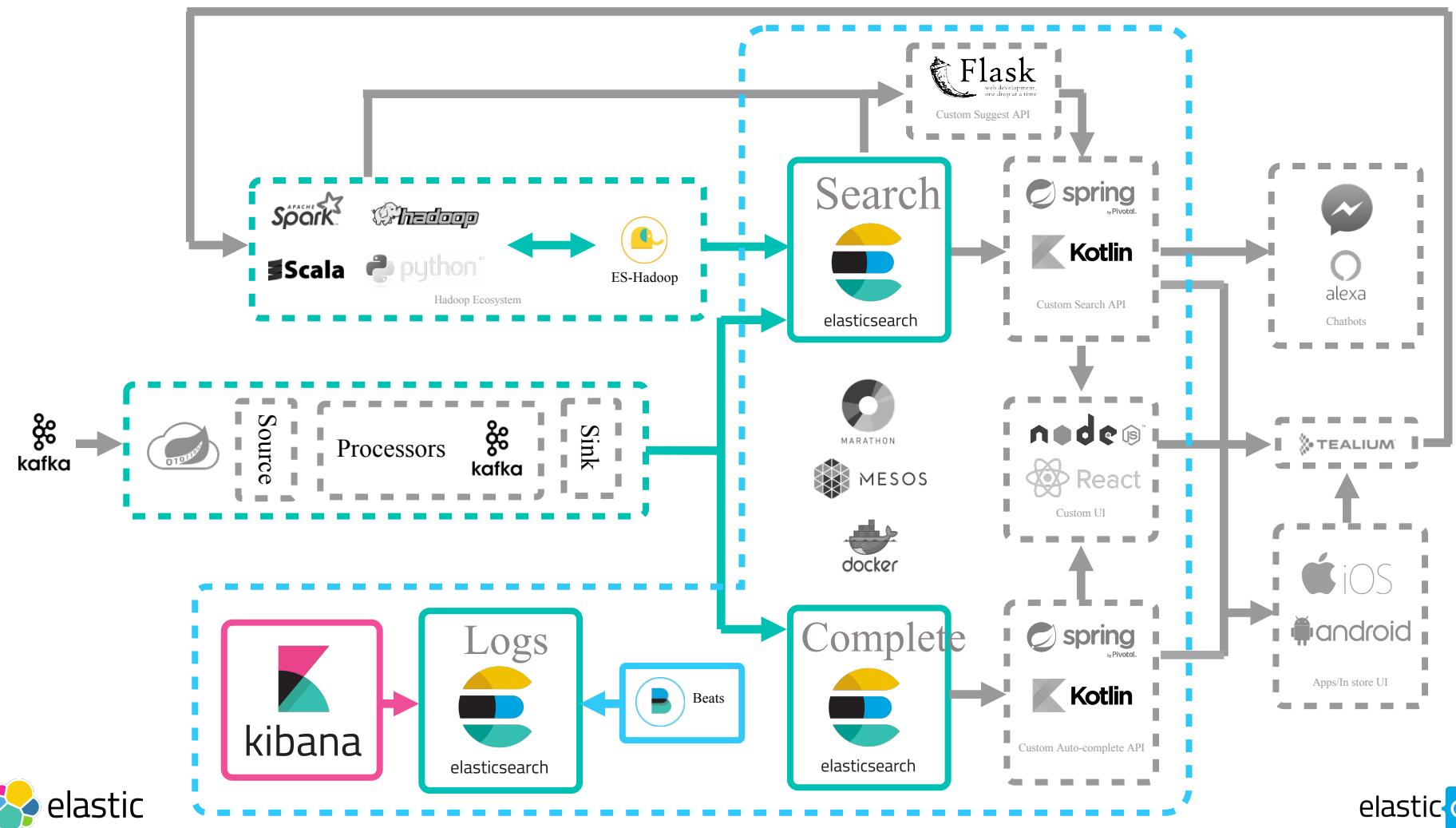
CHALLENGE

Performance

Consistent
Experience

Business
Logic

+CSAT



Features

Product Variations

Category & Attribute Matching

Did You Mean

Autocomplete

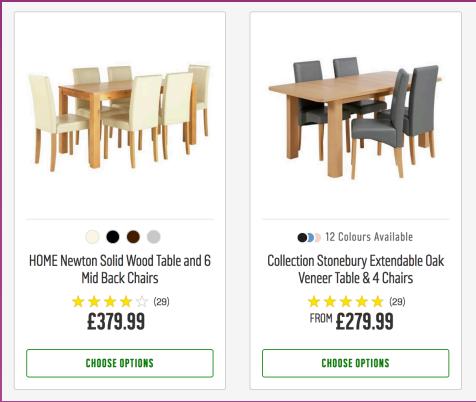
Customer Insights

Availability

Logging

Product Variations - Experience

Colour Ambiguity



Two product cards for dining sets. The first card shows a table and chairs with a grey and white color scheme. The second card shows a table and chairs with a grey and black color scheme. Both cards include a color swatch, product name, rating, price, and a 'CHOOSE OPTIONS' button.

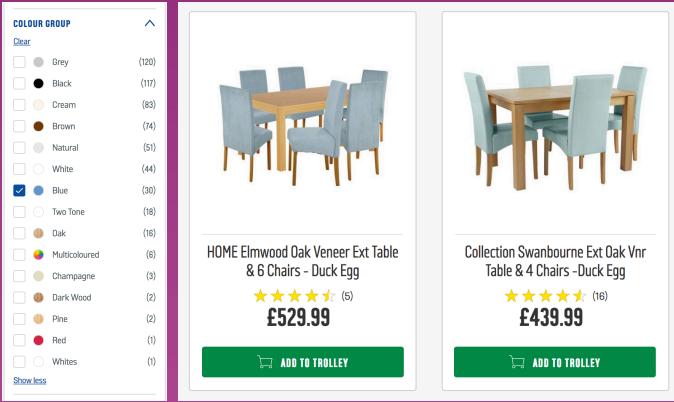
HOME Newton Solid Wood Table and 6 Mid Back Chairs
★★★★★ (28)
£379.99

Collection Stonebury Extendable Oak Veneer Table & 4 Chairs
12 Colours Available
★★★★★ (28)
FROM £279.99

CHOOSE OPTIONS

CHOOSE OPTIONS

Filtered by Colour



A sidebar on the left shows a color filter for 'Blue' with a checked checkbox. The main area displays two blue-themed dining sets with their details, ratings, prices, and 'ADD TO TROLLEY' buttons.

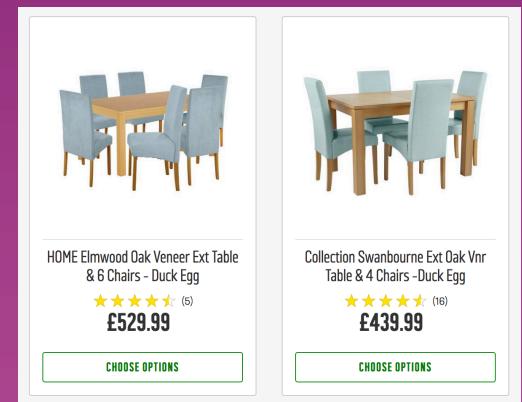
HOME Elmwood Oak Veneer Ext Table & 6 Chairs - Duck Egg
★★★★★ (5)
£529.99

Collection Swanbourne Ext Oak Vnr Table & 4 Chairs - Duck Egg
★★★★★ (16)
£439.99

ADD TO TROLLEY

ADD TO TROLLEY

Search by Colour



Two product cards for blue-themed dining sets. The first card is for the 'Elmwood' set and the second for the 'Swanbourne' set. Both cards include a color swatch, product name, rating, price, and a 'CHOOSE OPTIONS' button.

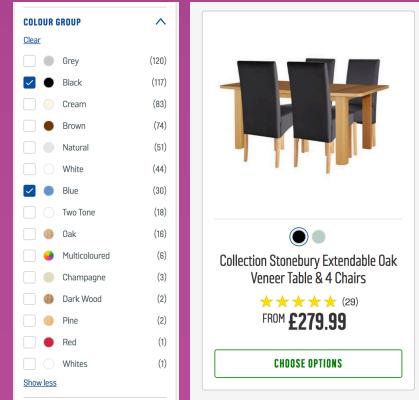
HOME Elmwood Oak Veneer Ext Table & 6 Chairs - Duck Egg
★★★★★ (5)
£529.99

Collection Swanbourne Ext Oak Vnr Table & 4 Chairs - Duck Egg
★★★★★ (16)
£439.99

CHOOSE OPTIONS

CHOOSE OPTIONS

Search: “dining sets”



A sidebar on the left shows a color filter for 'Blue' with a checked checkbox. The main area displays a blue-themed dining set with its details, rating, price, and 'CHOOSE OPTIONS' button.

Collection Stonebury Extendable Oak Veneer Table & 4 Chairs
★★★★★ (28)
FROM £279.99

CHOOSE OPTIONS

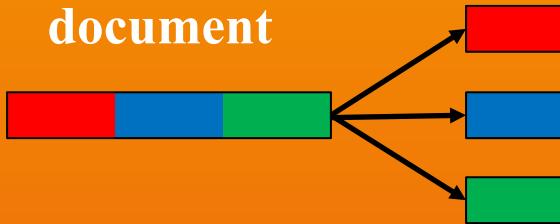
Search: “blue dining sets”

Product Variations

```
curl -XGET localhost:9200/product/123456

{
  ...
  "_source" : {
    "id" : "123456",
    "name": "This is a parent product",
    "variants": [
      {
        "id": "123456",
        "name": "This is an item",
        "attributes": [...]
      },
      {
        "id": "123457",
        "name": "This is another item",
        "attributes": [...]
      }
    ],
    "categories": [...],
    "attributes": [...]
  }
}
```

Root
document



Product Variations – Filtering &

Se

```
curl -XPOST localhost:9200/product/_search -d
{
    ...
    "filter": {
        "bool": {
            "must": [
                "bool": {
                    "should": [...]
                },
                "bool": {
                    "should": [...]
                }
            ]
        }
    }
}
```

```
curl -XPOST localhost:9200/product/_search -d
{
    ...
    "constant_score": {
        "filter": {...}
    },
    "bool": {
        "should": [
            "match": {
                "definingAttribute": "blue"
            }
        ]
    }
}
```

COLOUR GROUP

Grey (120)

Black (111)

Cream (83)

Brown (74)

Natural (51)

White (44)

Blue (30)

Two Tone (18)

Oak (16)

Multicoloured (6)

Champagne (3)

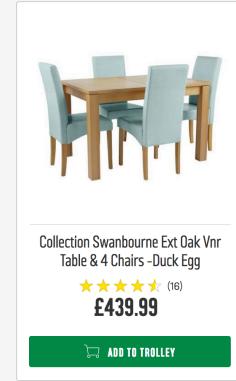
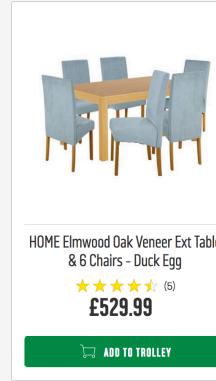
Dark Wood (2)

Pine (2)

Red (1)

Whites (1)

[Show less](#)



COLOUR GROUP

Grey (120)

Black (111)

Cream (83)

Brown (74)

Natural (51)

White (44)

Blue (30)

Two Tone (18)

Oak (16)

Multicoloured (6)

Champagne (3)

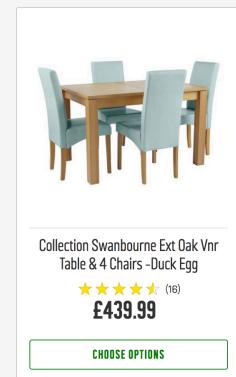
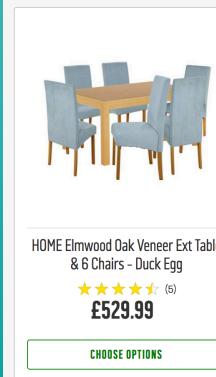
Dark Wood (2)

Pine (2)

Red (1)

Whites (1)

[Show less](#)



Product Variations - Aggregation

```
curl -XPOST localhost:9200/product/_search -d
{
  ...
  "aggs": {
    "filter": {...},
    "aggs": {
      "nested": { "path": "variants" },
      "aggs": {
        "filter": {...},
        "aggs": {
          "reverse_nested": {},
          "aggs": {
            "terms": {...}
          }
        }
      }
    }
  }
}'
```

OR

Plugin

extends AbstractSearchScript

Features

Product Variations

Category & Attribute Matching

Did You Mean

Autocomplete

Customer Insights

Availability

Logging

How do users search?



chrome **pedal bin**
grey **pedal bin**
semi round **pedal bin**
retro **pedal bin**
mini **pedal bin**
classic **pedal bin**
square **pedal bin**
cream kitchen **pedal bin**
pedal bin stainless
pedal bin toilet brush
pedal bin 50
pedal bin 50 l
pedal bin blue
pedal bin copper
pedal bin 20 litre
pedal bin 12 litre
purple **pedal bin**
bathroom **pedal bin** stainless
bathroom **pedal bin** stainless steel

Content Based Query Mining

Cooker & Ovens

Consoles

Cables

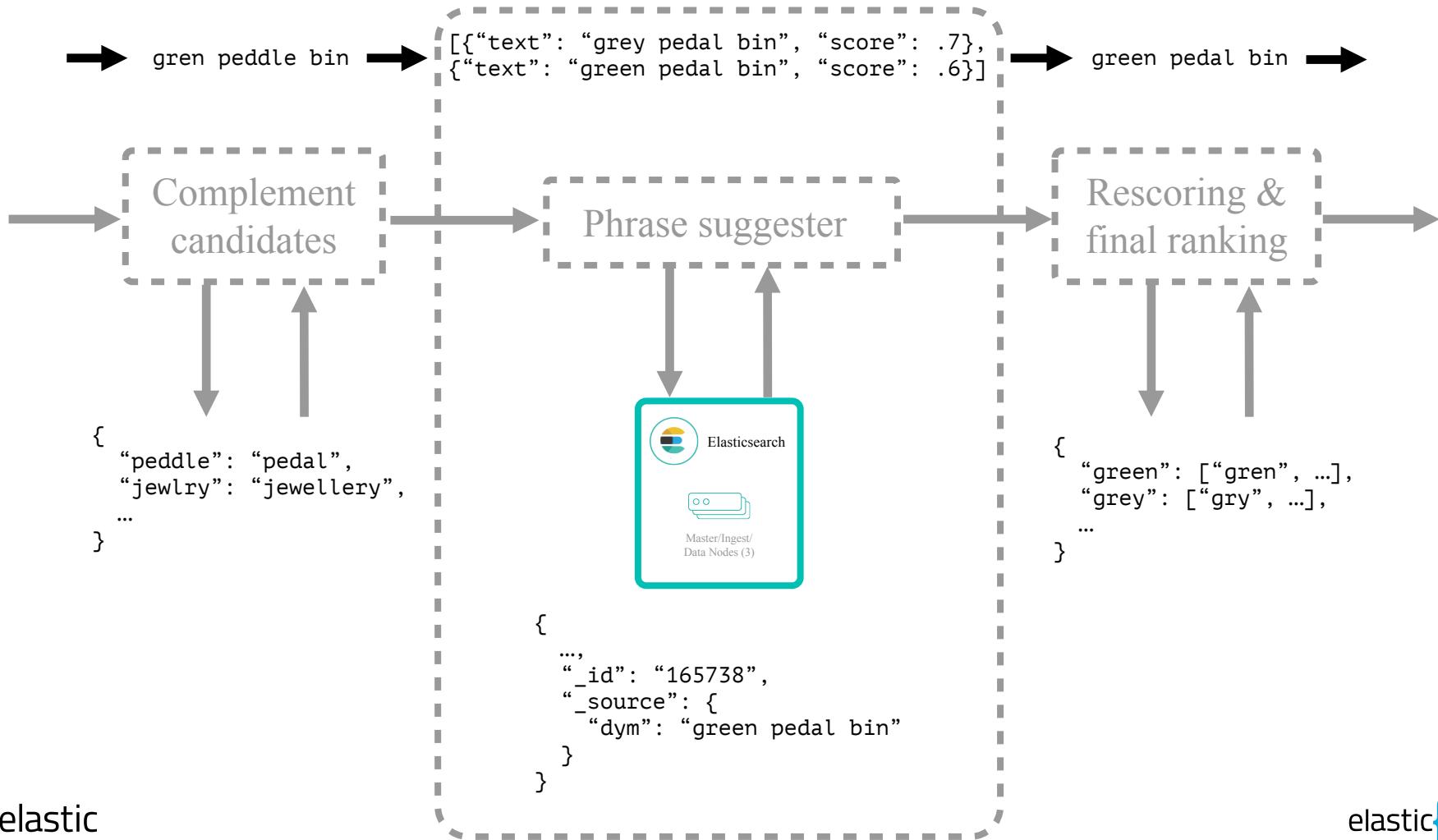
Jeweller



fastText

PYTORCH





Features

Product Variations

Category & Attribute Matching

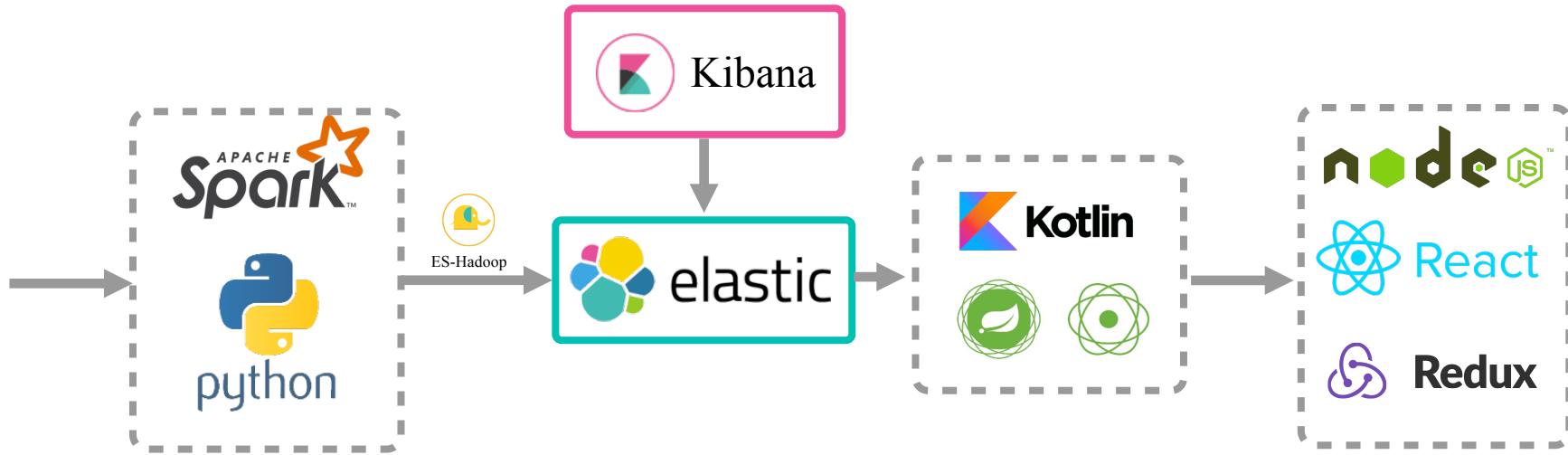
Did You Mean

Autocomplete

Customer Insights

Availability

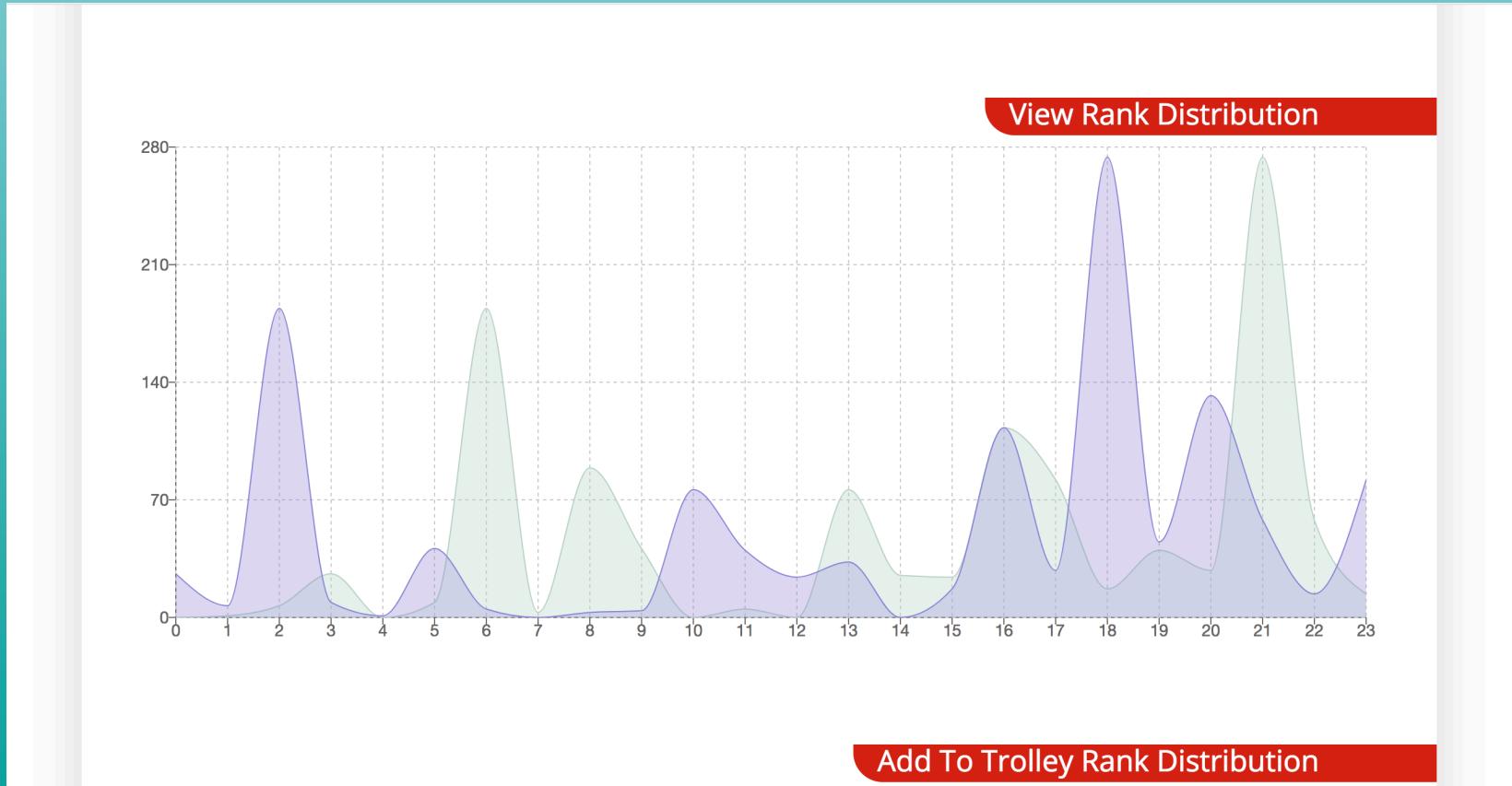
Logging



Customer Insights



Relevancy Regression



Features

Product Variations

Category & Attribute Matching

Did You Mean

Autocomplete

Customer Insights

Availability

Logging



BUILDING THE FUTURE
OF RETAIL

<http://argos.careers>