

Co-op's Transformation from Bricks & Mortar to AI with Databricks

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Co-op: Always a Business Disruptor



**PRODUCTION FOR USE
NOT
PROFIT**

BISCUITS, &C. SUPPLIES FOR YEAR 1930. £707,313.

PRESERVES, &C. SUPPLIES FOR YEAR 1930. £2,849,655.

CRUMPSALL

MIDDLETON

SUN-MILLS

FLOUR AND PROVISIONS SUPPLIES FOR 1930. £10,577,100.

LEICESTER

LEDS

BOOTS, SHOES, &C. SUPPLIES FOR YEAR 1930. £1,997,660.

CLOTHING. SUPPLIES FOR YEAR 1930. £885,081.

**YOUR MONEY used in
YOUR OWN FACTORIES by
the Co-operative Wholesale Society
is the beginning of the
CO-OPERATIVE COMMONWEALTH**



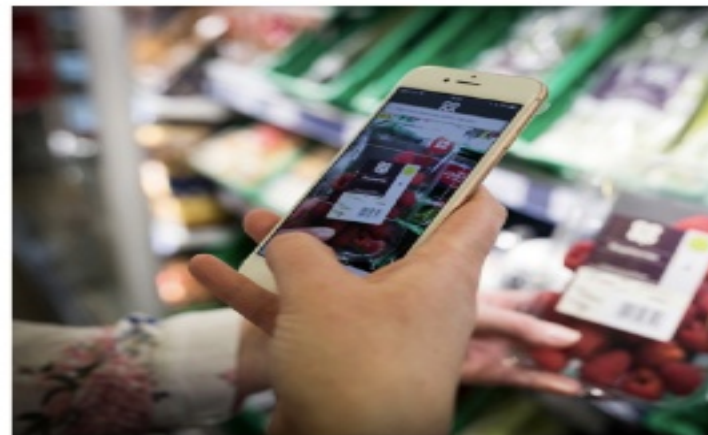
Today's Retail: Massive Tech Disruption



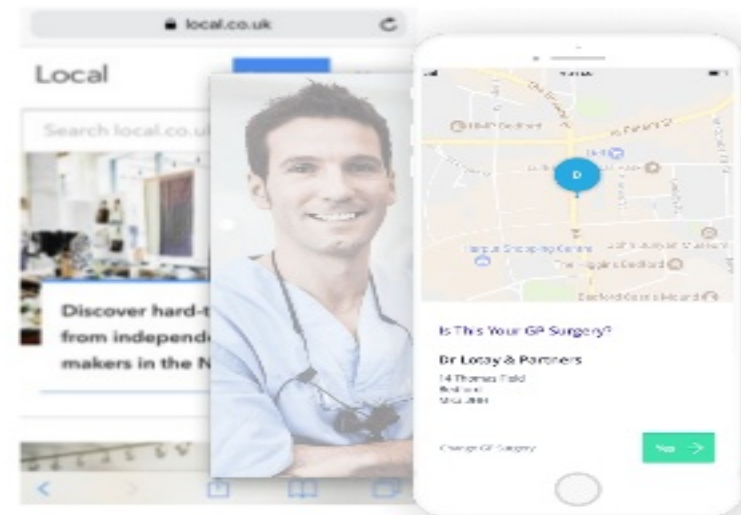
Co-op's innovations...



Self-driving machines
for delivery



In-aisle mobile
payments



New digital services for
members

Innovations Require a New Approach to Data

- Align data vision to creating customer value
- Embed trust and ethics into data usage
- Build a modern and agile data ecosystem
- Develop machine learning competencies

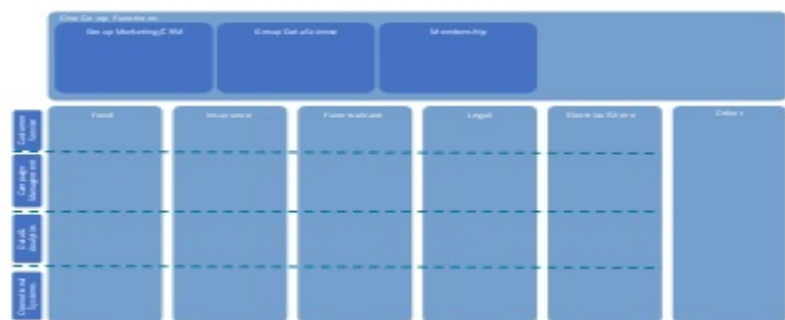
We agreed a new data vision

Our vision is to be totally **trusted** with data, and to use it to **create value** for our **customers, members and communities**

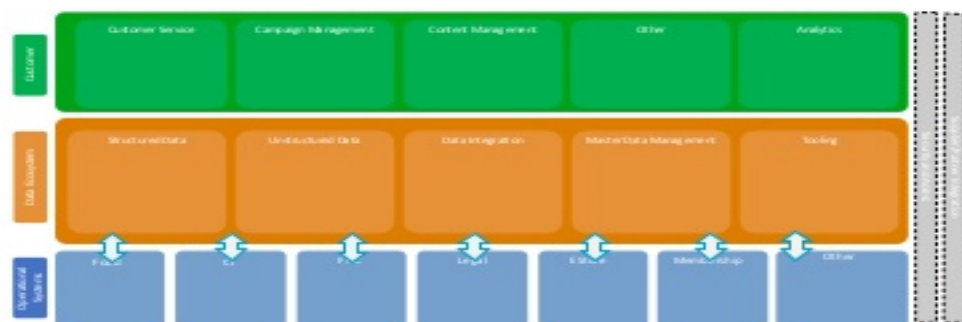
Talked about Data and Ethics



Modern and Agile Data Ecosystem



- Silo'ed
- On-premise



- Unified
- Cloud first
- Learn quickly through experiments

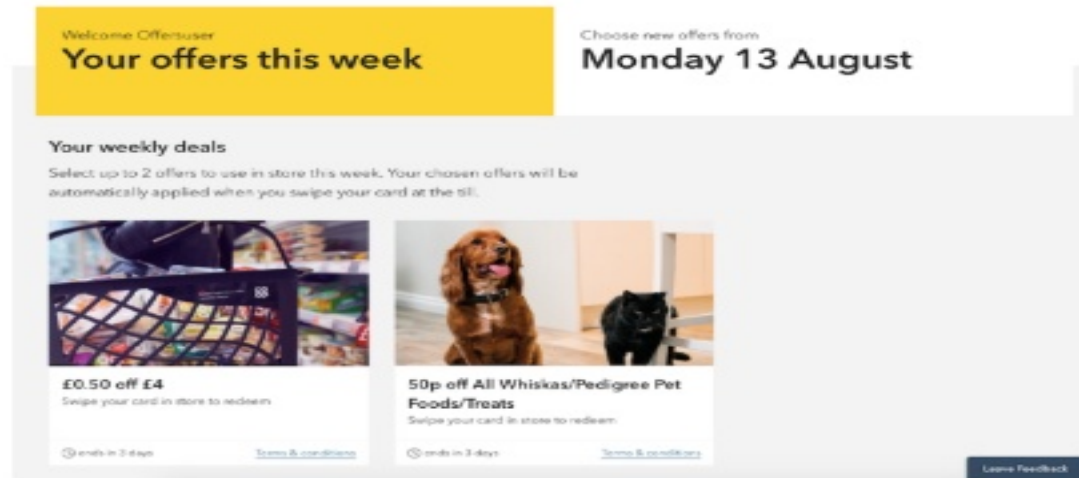


Accelerate ML competencies

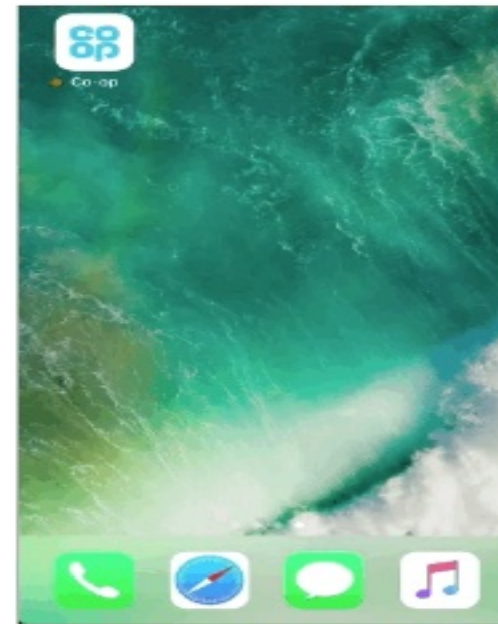
- New tooling for data science users to leverage machine learning
- Achieve faster time to value by creating analytic workflows from data to interactive exploration to production
- Exploring collaborative working and increased pace in delivery
- Standardizing on Azure cloud services



Our first use case: Personalisation



These are pre-live designs for what people will see on their membership portal and app



Lots of models and analysis...



Product affinity



Availability



Favourite shops /
times



Stretch



New product
recommendation

Got going really quickly



- Databricks running in Azure
- Training for Data Scientists / Analysts / Engineers
- Atomic data transferred into Azure blob storage
- Started Machine Learning

Product affinity



Every product
Every member
Every store
Every basket

11 Trillion rows of
intermediate data

Product affinity



Azure Blob
T-SQL

PySpark
Databricks

Force directed graph
d3js

Product affinity



Computed affinity
for combinations
of products for all
stores for all
weeks

Working more with Databricks

- We've already used ALS & Neural Networks for developing recommendation algorithms
- Other teams now looking at other business cases
- Our Digital offers trial goes live *very* soon
- And we'll learn out in the open
<https://digitalblog.coop.co.uk>

Thank you...

- Co-op Retail Insight, Data Science, Data Engineering and Cloud Engineering
- Databricks
- Microsoft