Building internal BI capacity in Arla

Kasper Pors Hansen – 06 Sep 2018

- Kasper Pors Hansen
- Arla Analytics Powerhouse
- BI and Advanced Analytics

The next 25 minutes we will be talking about

- Arla
- BI and Analytics at Arla
- Why, What and How of we build BI capacity at Arla
- Specific examples of BI at Arla

About Arla

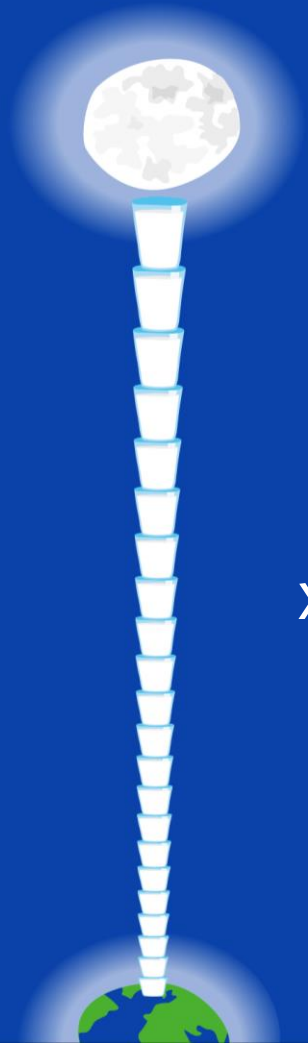

11,200
OWNERS
13,9 BL. KG.
MILK INTAKE
THE 4TH
LARGEST
19.000
COLLEAGUES
Arla
CASTELLO
Puck
LURPAK
4 GLOBAL
BRANDS
10,3 BL. EURO
REVENUE


Arla

We are the **4th largest dairy** company in the world based on milk intake

3.5 glasses for everyone

To the moon



x 7

Around the world

x 47

We provide dairy that
nourishes body and soul
throughout life

Milk, yoghurt, powder and cooking 50%

Cheese 30%

Butter & spreads 20%

We take **responsibility** – throughout the entire value chain

Farmer | Inbound | Production & administration | Outbound | Customer

Building internal BI capacity at Arla

Why is it important to build internal capacity ?

Finding the balance between external and internal capacity is key

External capacity

- Flexibility in the workforce
- Easier to find specialist skills
- Reduced risk
- Very fast to start up a new project

Internal capacity

- The knowledge remains with Arla
- More cost efficient
- More ownership over the solutions we build
- Stronger connection with our values
- Better understanding of our mission, vision and industry

Building internal BI capacity at Arla

What kind of capacity is being built ?

Finding the balance between business and IT skills is key

Skills

- SAP
- SAP BW
- Power BI
- R
- Python
- .net
- SQL

Roles

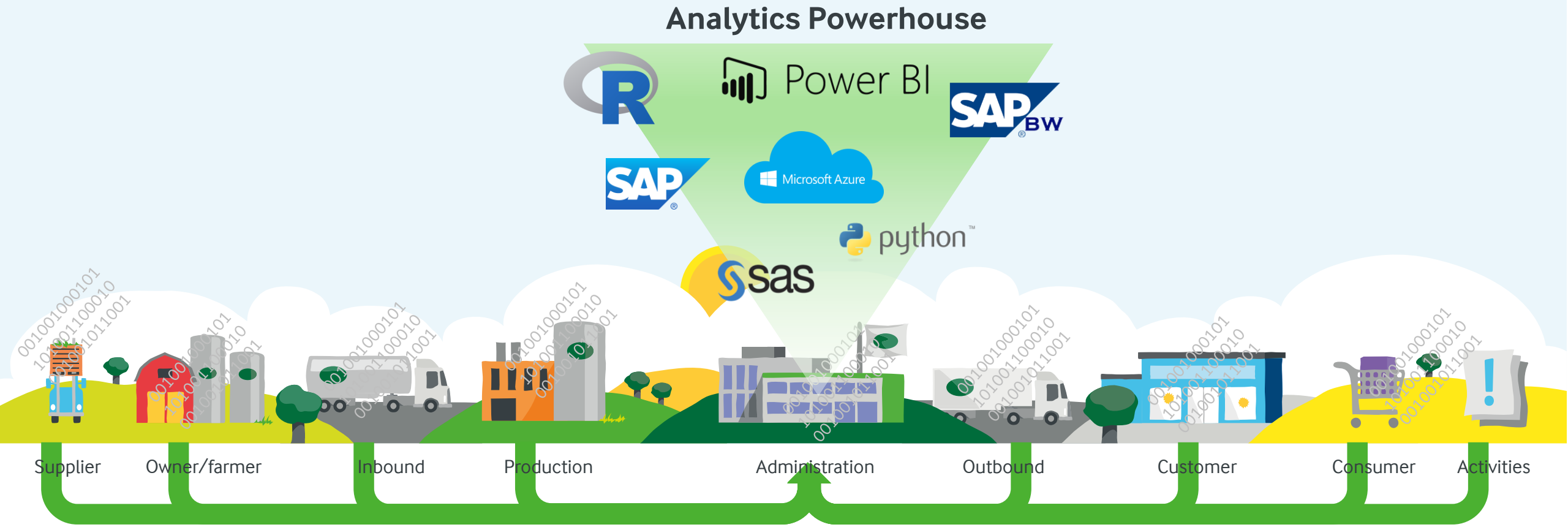
- Subject Matter Expert (Business)
- Scrum Master (Business)
- Product Owner (Business)
- Data scientist (Business / IT)
- Front end Developer (IT)
- Back end developer (IT)
- Data engineer (IT)
- Architect (IT)

Building internal BI capacity at Arla

How is Arla building and attracting the internal capacity ?

- **Scale**
  - The Arla valuechain is particularly wide offering a wide range of opportunities and complexity in BI
  - Provides opportunities for the individual employee
- **Agility**
  - Arla is Agile resulting in fast turn around time for new solutions and features
  - Focus on delivering value
- **Insight and foresight**
  - Arla is more than traditional BI, it is also data science and analytics using state of the art tools and methods
  - BI becomes part of running the business
- **Analytics Powerhouse**
  - Centre of competency for BI and Analytics at Arla
  - Resources in both Denmark and Poland

The **Analytics Powerhouse** use data from across the valuechain to provide Arla with insight and foresight

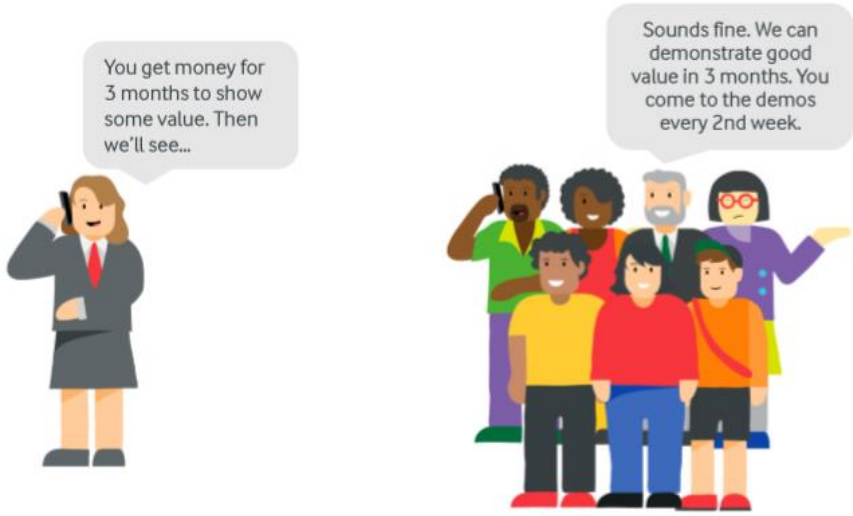


Arla is agile!

Time to build new technological capacity is significantly reduced

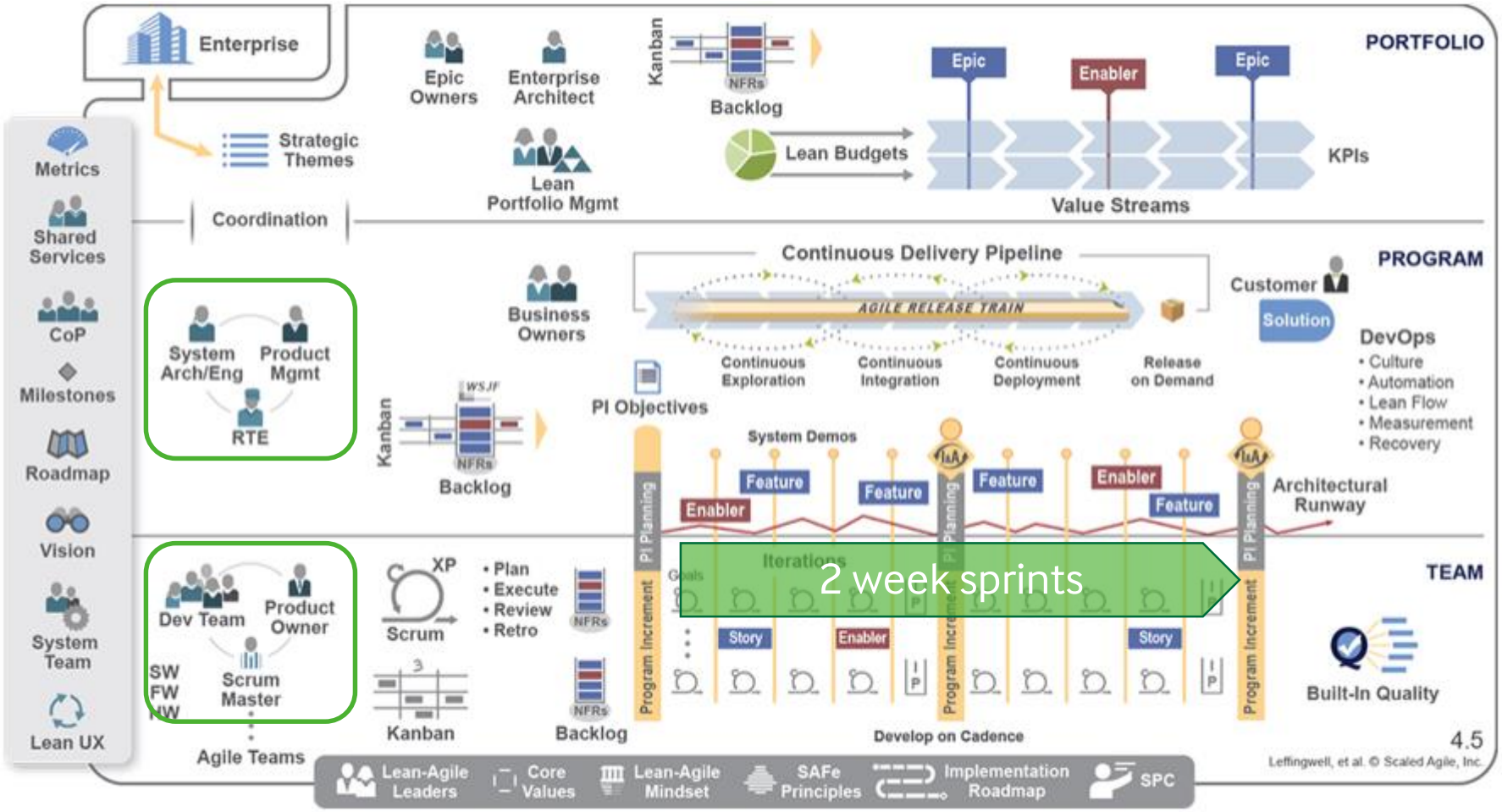
- Arla IT Solutions has adopted Agile with BI and Analytics being the first 18 months ago
- Delivery teams are cross functional with a mix of people from IT and business and a mix of internal and external resources
- Time to first User Go Live significantly reduced

Vision	*over*	**fixed scope**	
Short planning cycles	*over*	**long analysis phase**	
Committed team members	*over*	**stretched allocation**	



Arla is agile!

Analytics Powerhouse is a delivery train



Building internal BI capacity at Arla

Specific BI examples delivered by the Analytics Powerhouse

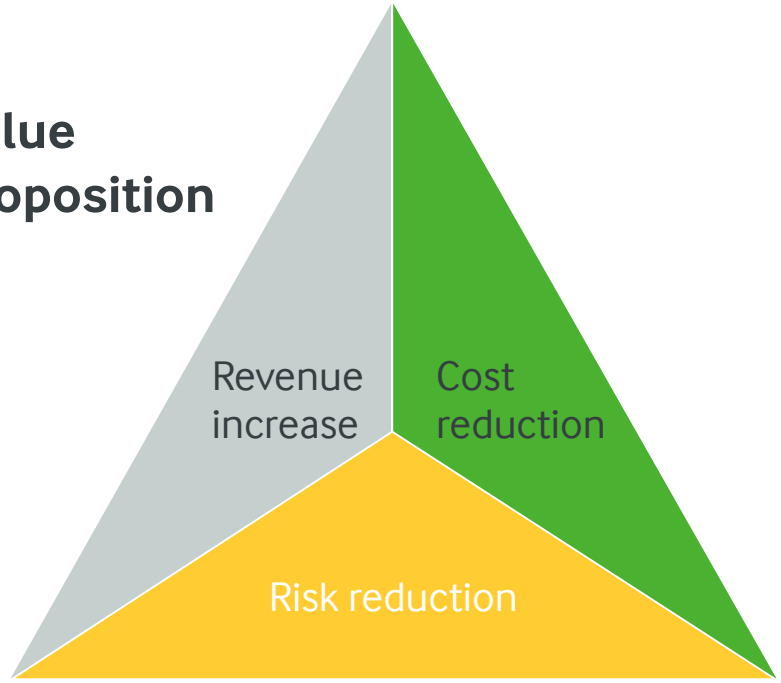
1. Optimising trade promotion spend by analysing impact on sales
2. Integrate & automate data for Stock Keeping Unit optimization & complexity reduction
3. Improving milk intake forecasting accuracy using machine learning learning
4. Consumer segmentation using analytics on online behaviour

Let your data innovate!

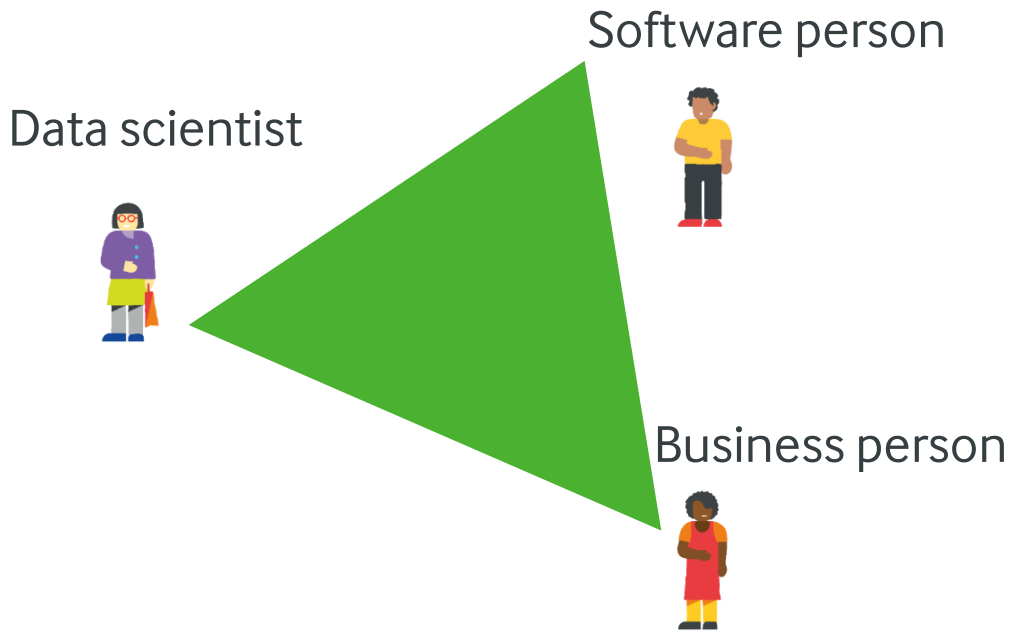
- And work with the Analytics Powerhouse to make it happen

1. Define the question
2. Deliver PoC in sprint of 10 weeks
3. Scale (increments of 10 weeks) or fail

Value proposition



Approach



Something about data

The four V's

- **Volume:** *”data at rest”*, i.e. the amount of data.
- **Variety:** *”data in many forms”*, i.e. different types of data (e.g. structured, semi-structured and unstructured, e.g. text, web or multimedia data), data sources (e.g. internal, external, public) and data resolutions.
- **Velocity:** *”data in motion”*, i.e. the speed by which data are generated and need to be handled.
- **Veracity:** *”data in doubt”*, i.e. the varying levels of noise and processing errors.

\+ Big data makes new types of analytics possible

\- Big data forces us to change the way we collect, store, manage, analyze and visualize data.

 Source: Diego Kuonen, Statoo Consulting.

Optimising trade promotion spend by analysing impact on sales

What was done?

Situation

- The promotion planners were missing insight into ROI on the trade promotion. This was preventing them from learning about the impacts of promotions.

What was done

- Using PoS data to automate the calculation of the campaign impacts, by comparing numbers on regular weeks to the ones where promotions were planned.

Technology

Big data & analytics

Analytics method

Descriptive analytics

Big Data Dimensions

- Volume
- Velocity
- Variety
- Veracity

Data sources

- Promotion planning data
- AC Nielsen
  - Contains SKU sales data on a weekly level.
- Customer codebook
  - Is used when promotions are on sub-chain level, it is used for calculating approximately sub chain sales from the Nielsen data.

Value area

Revenue growth

Org & value chain

Commercial Europe

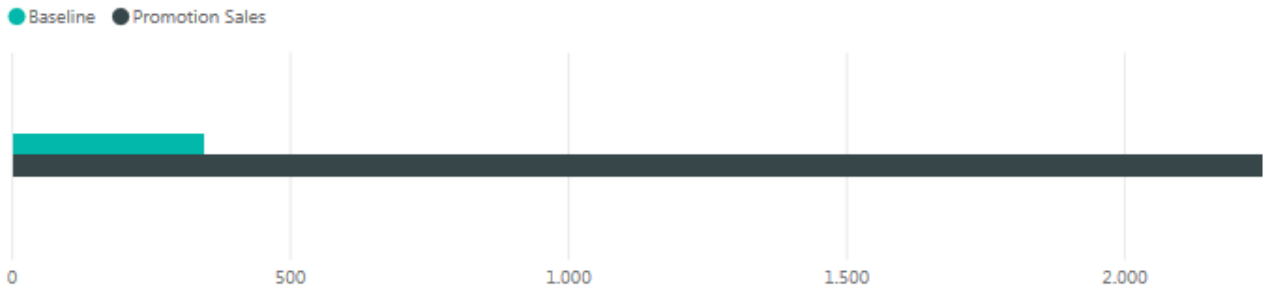
Customer

Optimising trade promotion spend by analysing impact on sales

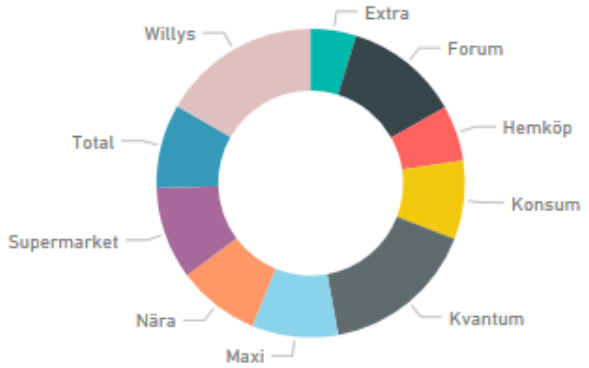
Customer: Alle | Main SKU: Y | CAMPAING TYPE: Alle

Extra- v15 - Arla Hushållsost Mager 17% 5 x ca2,2 kg

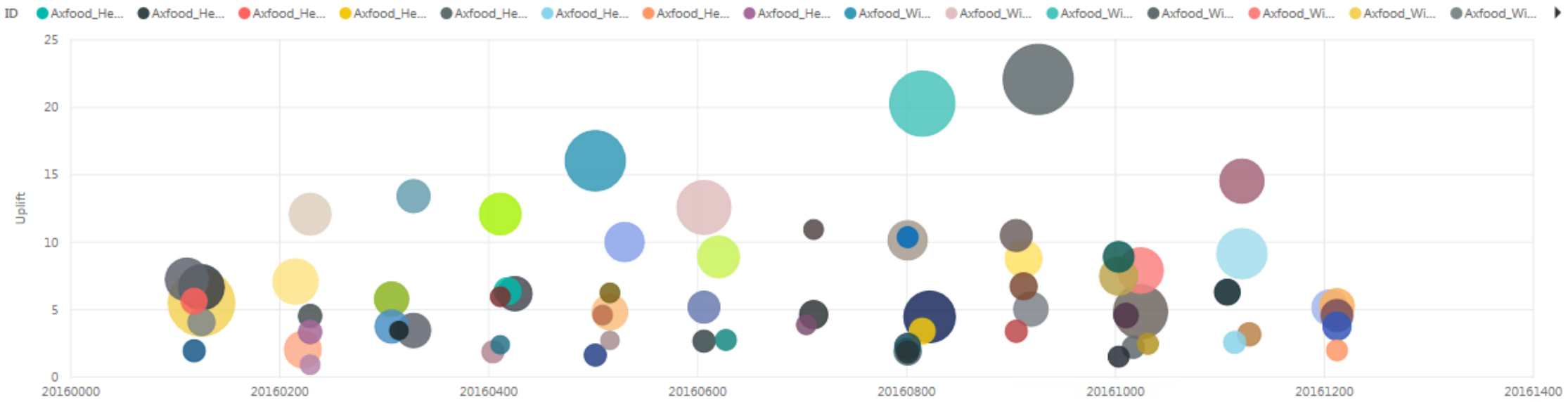
Baseline og Promotion Sales — Første Campaign Name



Gennemsnit af UpliftVal efter Chain



DateInt, Uplift og Promotion Sales efter DateInt og ID



Integrate & automate data for SKU optimization & complexity reduction

What was done

Situation

- SKU Management Process is time consuming - more than 6 months.
- Decisions on SKU refinements are based on a data dump copied into more than 50 different Excel sheets (1 per dairy)
- Data is outdated by the time it is ready for decision making and often does not include all parameters relevant for decision making

What was done

- A user dashboard in PowerBI based on 3 sites was created.
- The portal shows the daily updated status of SKUs, from multiple perspectives, with complexity as well as commercial analysis and automated reports.
- This was done to enable better monitoring and optimization of product portfolio.
- The data foundation for future commercial attractiveness and complexity analysis and understanding are built into HANA.

Technology

Big data & analytics

AI/Machine learning

Analytics method

Descriptive analytics

Big Data Dimensions

Volume

Velocity

Variety

Veracity

Data sources

- Production Volumes
- Sales data
- Bill of Material and costing data
- Global Master Data catalogue
- Financial Forecast data
- Custom data sets

Value area

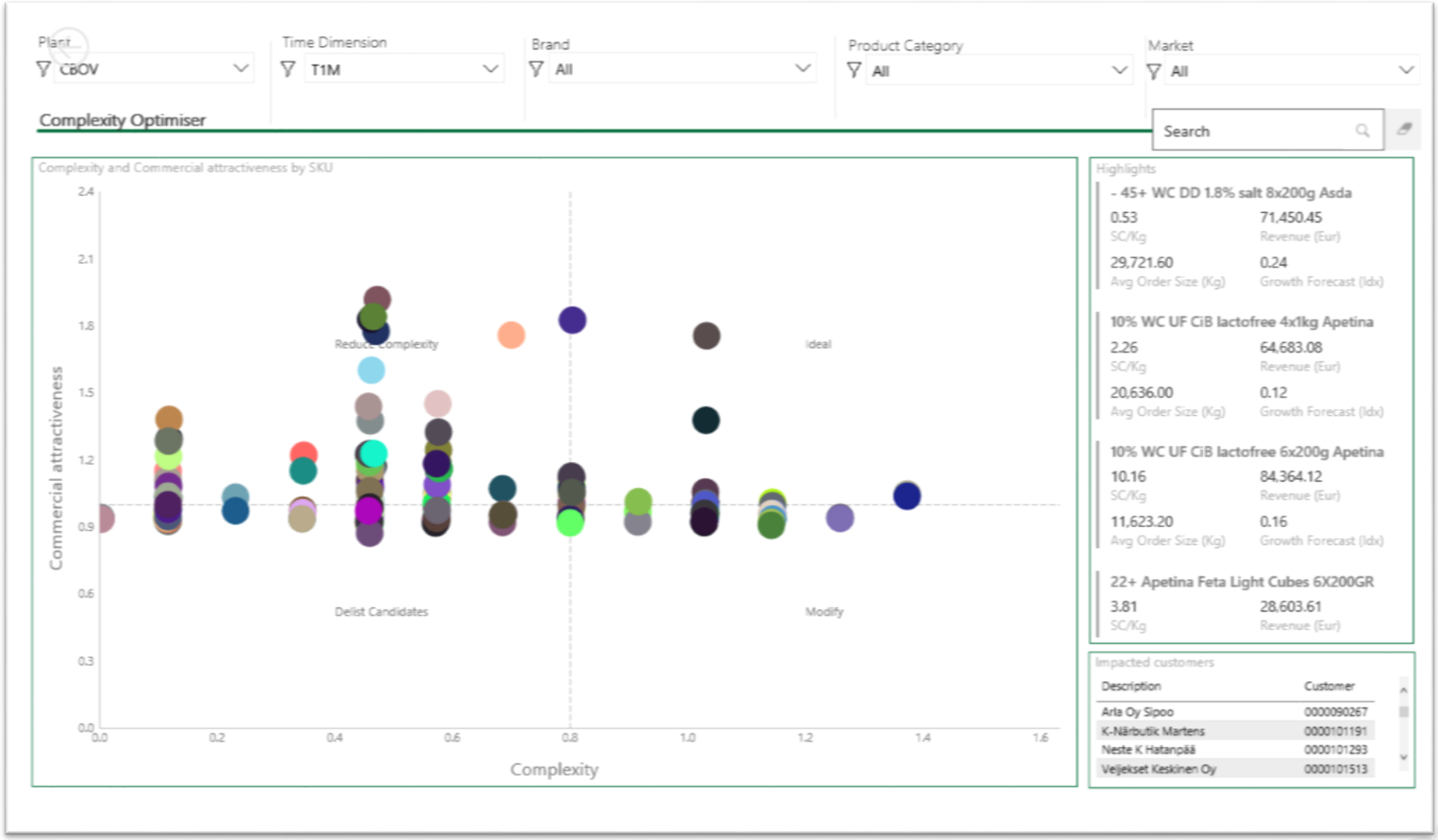
Efficiency gains

Org & value chain

Commercial Europe

Supply Chain

Integrate & automate data for SKU optimization & complexity reduction



Improving milk intake forecasting accuracy using machine learning

What was done?

Situation

- Currently, there is no unified approach for constructing the milk intake forecasts across markets.
- The data foundation for the current approach is very limited and the use of Excel makes is very time consuming.

What was done

- A forecasting methodology with underlying clear drivers and assumptions was developed and visualized as an interactive dashboard.
- Machine learning techniques made it possible to build on a much richer data foundation, thus improving accuracy.

Technology

Big data & analytics

AI/Machine learning

Analytics method

Penalized regression

Big Data Dimensions

Volume

Velocity

Variety

Veracity

Data sources

- Daily milk intake data from all farmers
- National herd data from DK:
  - No. of cows
  - Delivery percent
- Arla on-account milk price
- Feed price (SEGES)

Value area

Efficiency gains

Org & value chain

Millk, Members & Trading

Owner/farmer

Improving milk intake forecasting accuracy using machine learning

Milk Intake Forecast

Choose week of first forecast in 2016:

1

Choose a milk type:

Total

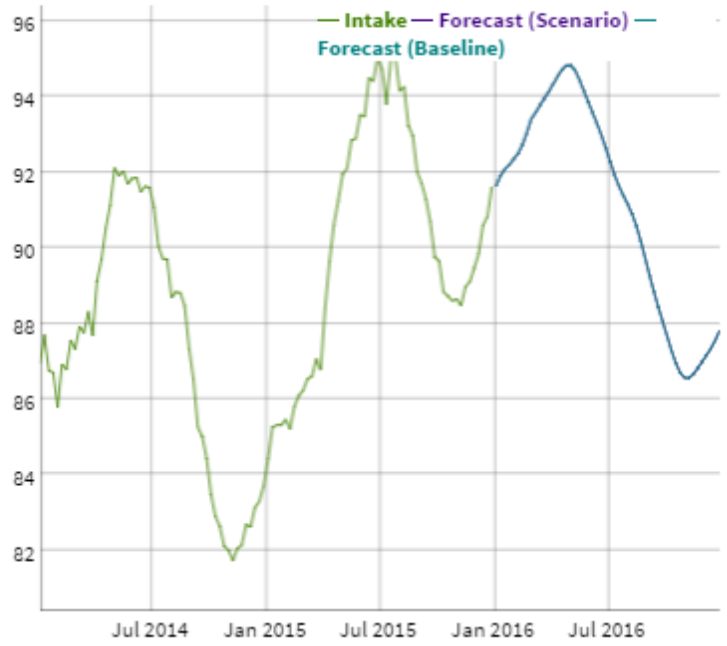
Forecast Scenario:

As Baseline

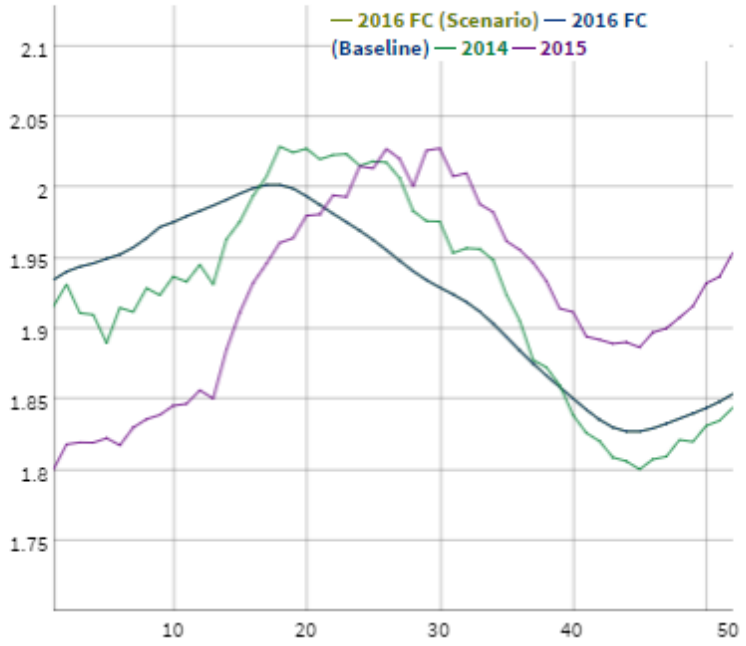
Compare forecasts to actual values

Download Results

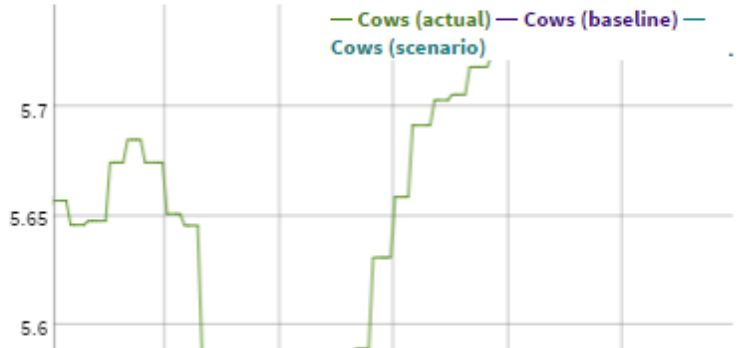
Milk Intake Forecast



Milk Profile



Input Variables



Scenario Analysis

The scenario is fixed at the baseline. It is not possible to edit the values below.

	Cows	Delivery	Milkprice	Feedprice
W 1	5.72	96.57	29.17	171.00
W 2	5.72	96.57	29.17	171.00
W 3	5.72	96.57	29.17	171.00
W 4	5.72	96.57	29.17	171.00
W 5	5.72	96.57	29.17	171.00
W 6	5.72	96.57	29.17	171.00
W 7	5.72	96.57	29.17	171.00

Consumer segmentation using analytics on online behaviour

What was done?

Situation

- Arla owns webpage data that reveals consumer behaviour and measures digital engagement scores. This can be used for precision marketing.

What was done

- An investigation of the feasibility of using Arla's web data for customer segmentation was conducted.
- A preliminary cluster analysis of recipes using the web data was conducted in order to identify clusters of recipes that consumers are interested in.

Technology

Big data & analytics

Analytics method

Clustering

Big Data Dimensions

- Volume
- Velocity
- Variety
- Veracity

Data sources

- Traffic data from Arla websites.
- Usage data from "Karolines Køkken" app.
- Recipe data from "Karolines Køkken".

Value area

Efficiency gains

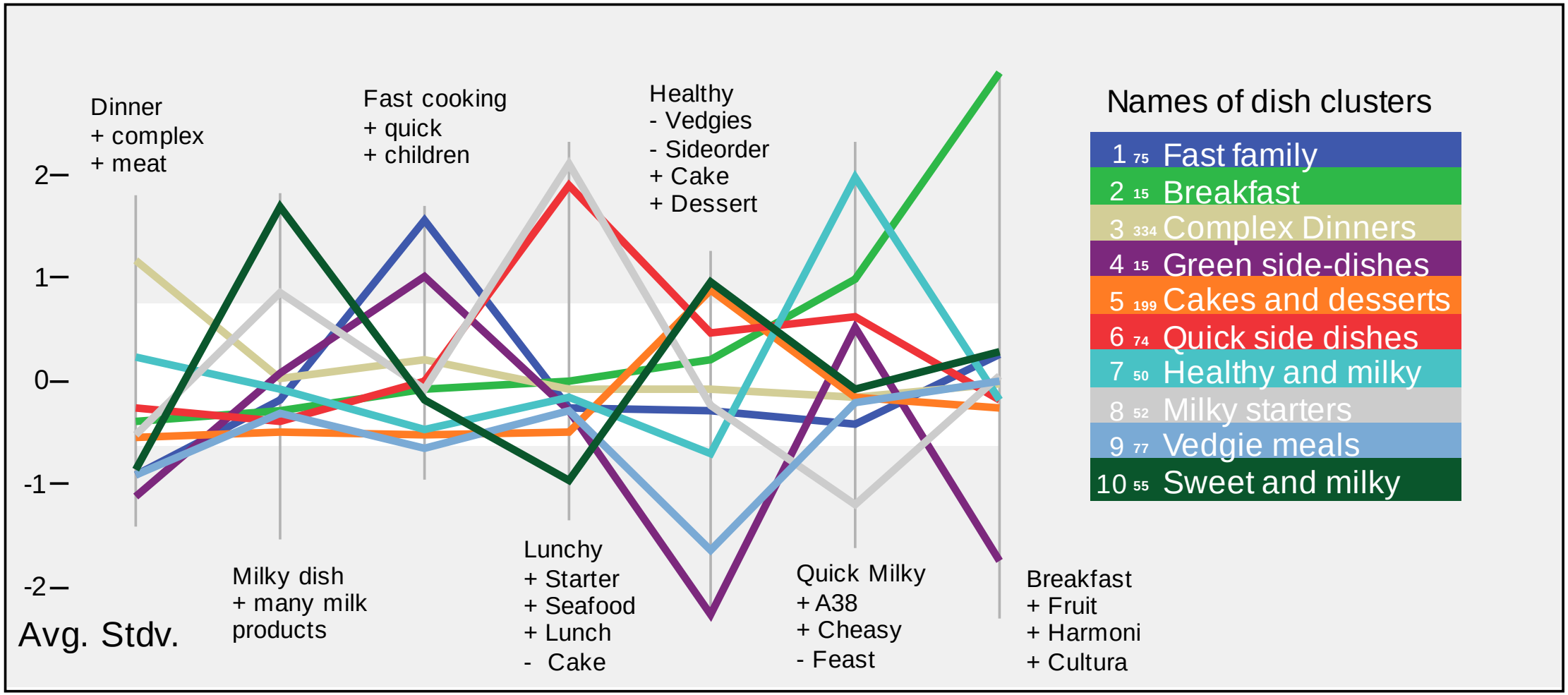
Revenue growth

Org & value chain

Marketing & Innovation

Consumer

Consumer segmentation using analytics on online behaviour



Thank you!

Our vision

Creating the future of dairy to bring health and inspiration to the world, naturally

Our mission

To secure the highest value for our farmers' milk while creating opportunities for their growth

NEEDS ARE DIFFERENT – LIFESTYLES ARE CHANGING

We will grow our categories through our **global brands**