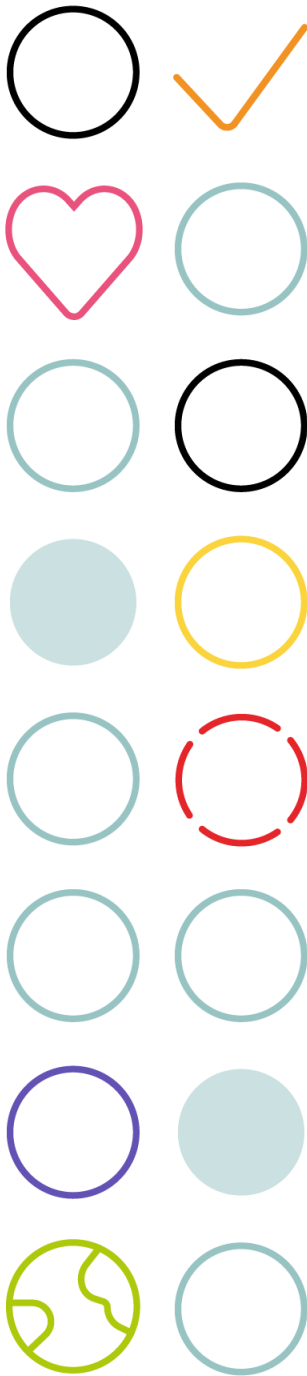Cheshire West & Chester Council

Using Data in Transformation and Change Programmes

Play your part towards
a Stronger Future

Cheshire West
and Chester

What ingredients do we have?

Centre of Excellence	Dashboards and Automation	Predictive Modelling	Data Hive	Data Science Skills
Work in partnership to focus on Council-wide strategic priorities	Deliver resilient and automated operational reporting	Use machine learning to analyse large corporate datasets and support early intervention	Develop a data community and connect with other councils and partners	Develop Python skills to manipulate, model, match and forecast data

Underpinned by robust ethics

A real-life project

The council's high needs sustainability programme wanted to understand the data to make informed decisions about future models of service delivery. There were a number of challenges:

- Multiple systems and spreadsheets
- Systems not always optimised
- Data quality issues
- No "single version of the truth"
- A hugely stretched business team

Synergy   EHC Hub   Spreadsheets   School Census

How we delivered the right outcomes

- We took an agile, collaborative and iterative approach to delivery to build consensus

- We reported into the programme board to help shape the right questions

- We built a comprehensive data model

- We highlighted data quality issues to inform business process

- We tested and assured the data model with the project team:
    - We started by showing trends over time against key factors
    - We asked: was the model giving answers that made sense?

- We asked: what should we forecast? *There were a few options to choose from!*

- We developed multiple forecasts to compare the results of the different methodologies and plotted these against the service view of the data

EHCP PLANS PREDICTIONS*

Legend: Prophet Forecast — Prophet upper — Holt-Winters — Operational
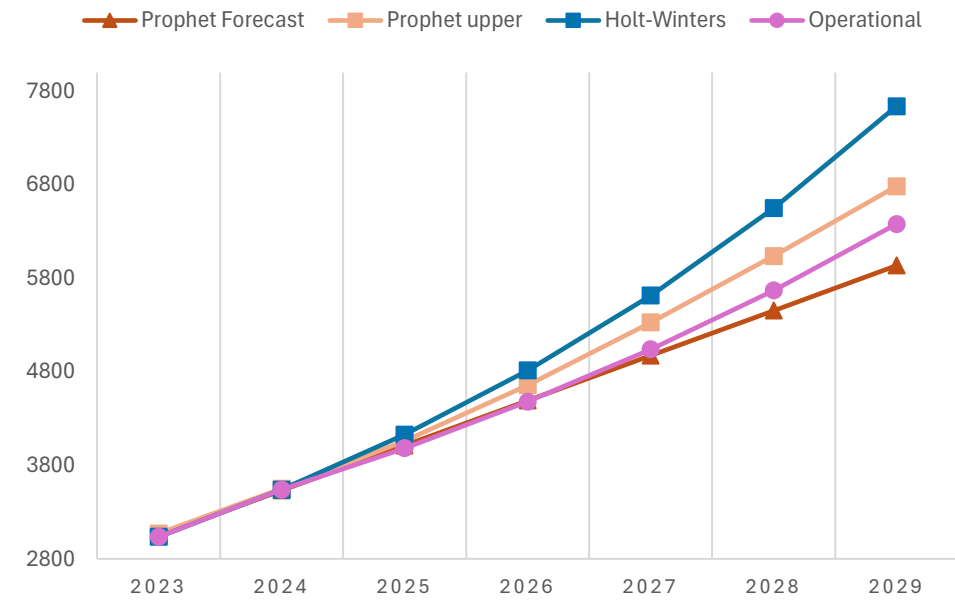
What did we recommend?

The option we recommended was the Prophet v2.0 approach.

- This factors in saturation points and smooths with best fit known spikes in the data
- This also avoids runaway exponentials which produce wild results over time
- This provides a good fit to current testing
- The programme board agreed to use the Prophet v2.0 mid-point as the Council's baseline forecast

Prophet (vers 2.0)

- Forecasts using 'changepoints' to smooth anomalous spikes to attempt to identify underlying trend
- Latest iteration increases sensitivity to sudden movements, offers an improved fit
- Factors in 'saturation point' in prediction of future taper
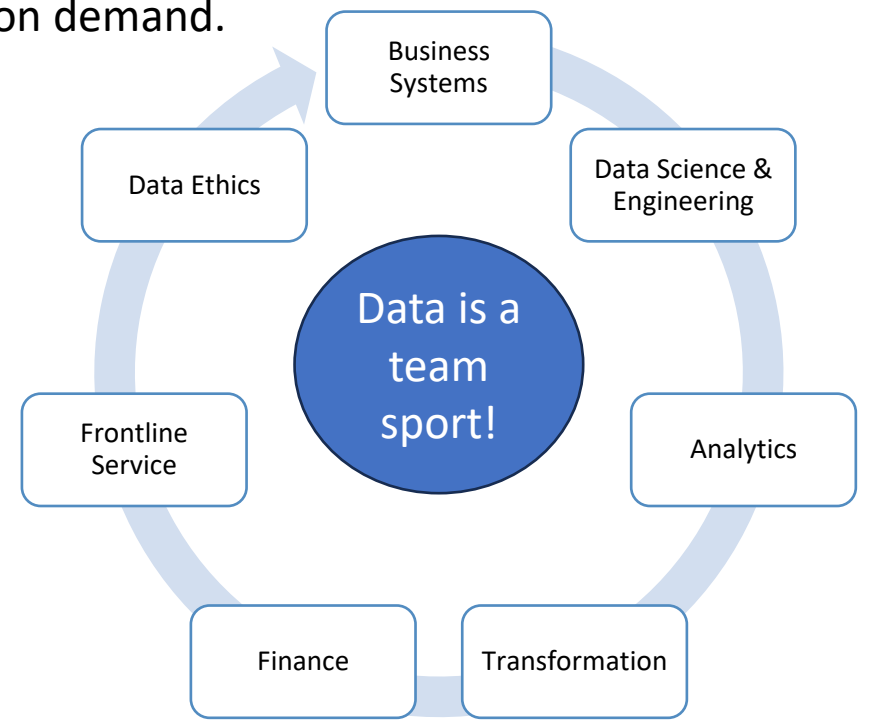- Provides a lower and upper bound
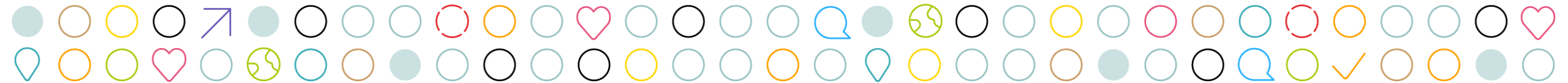
Next steps

What next...?

The future forecast of total numbers of EHCPs answers part of the question but cost of provision is driven by additional factors such as the type of placements pupils move into. The forecast of need (below) can be used to inform future sufficiency planning, but current demand is dictating pupil placement in a range of high-cost provision. The challenge will be to proactively plan provision by need rather than reactively based on demand.

Types of Need - Actual Plus Forecast
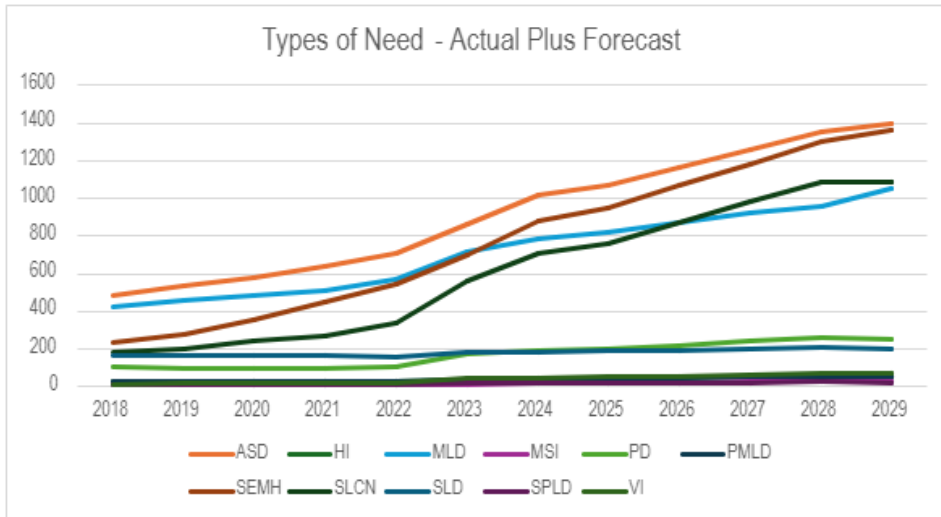
Modelling the financial forecast will need to consider how to take account of these additional considerations.

Business Systems
Data Science & Engineering
Data Ethics
Analytics
Frontline Service
Data is a team sport!
Finance
Transformation

Maternity Pay Calculator

What problem needed solving?

- Maternity pay calculations are still a very manual and time-consuming process.
- Demands on the team mean keep the hamster wheel turning.
- Limited time available to consider alternatives.

What have we developed?

- A proof-of-concept Power App to calculate maternity pay
- The next stage of development will link the app through to Power BI for reporting purposes

Using Data to Support Transformation

Creativity

Curiosity

Critical thinkers

Collaboration across teams
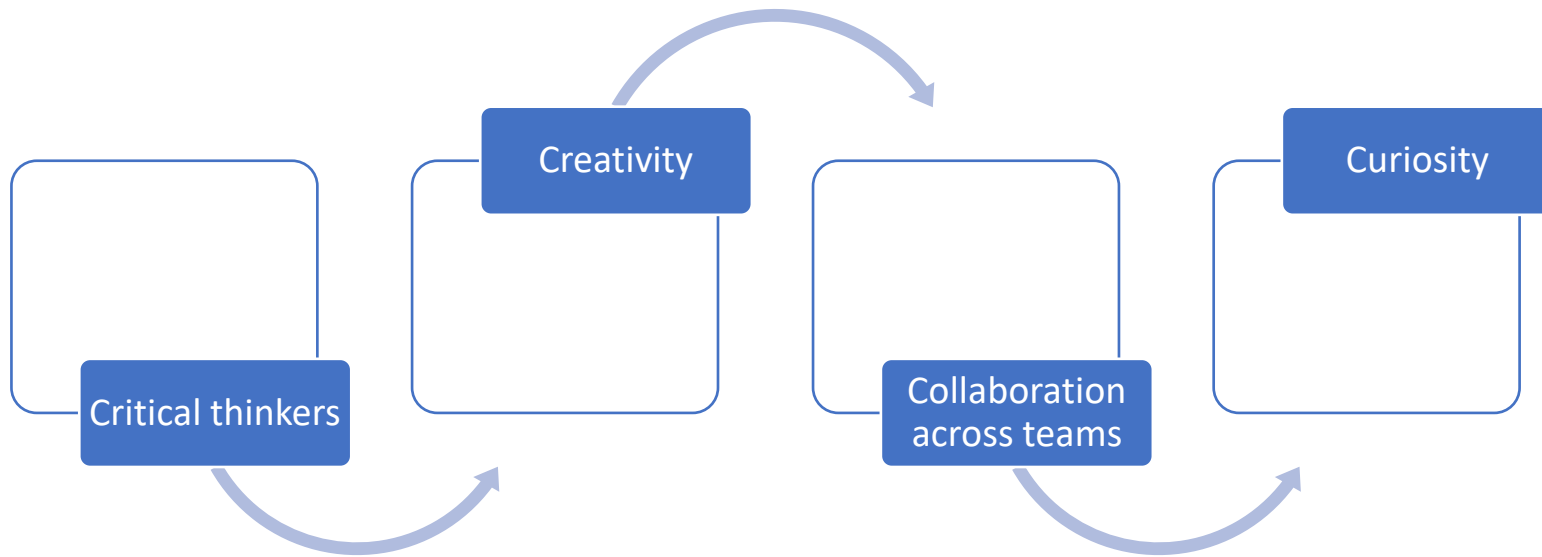
Solving our problems together!

It's not just about technology: we also need to understand processes and we need PEOPLE!