



HEALTHCARE
SOLUTIONS_

Expert Systems

CASE STUDY

Methods
Analytics_



OUR CLIENT

The Care Quality Commission (CQC) is the independent health and social care regulator for England.

It makes sure health and social care services are providing people with safe, effective, compassionate, high-quality care. It employs over 3,000 people.



THE CHALLENGE WE FACED

CQC aspired to become a more data-driven organisation. In particular, they wanted their inspection resources to be more effective.



After completing a successful Discovery project for them, we were asked to provide a Proof of Concept (PoC) for machine learning fed by their regular monitoring data. We were to explore and support the case for investing in a full system.

The system needed to help sift, present and link information to support decision making. Providing the following benefits:

01 INCREASED EFFICIENCY
in assessing incoming information

02 ASSESSABLE DATA
at the point of decision

03 LEVERAGE
the tacit knowledge of inspectors

04 INCREASING CONSISTENCY
between decisions

THE SOLUTIONS WE DEVELOPED

Our solution was split into four key stages, completed over 10 months.

1

Data Quality Assessment

A qualitative review of data sources and framing of guidance models with CQC input. We proposed non-quantitative lexical and linguistic analysis, guided by models and initial quantitative and statistical analysis.

The result: a report summarising the suitability of their data for this type of system. This included identifying gaps, ambiguity, inconsistency and complexity.

2

Classifier PoC Build

Classify notifications against ontology. We proposed using CQC statutory notifications as inputs to gauge significance, highlight areas of concern and add context.

We would also link notifications to CQC existing organisational reports. The output of this stage was to be a training data set, the classification code itself, and a report documenting the methodology and performance.

3

Ontology Development

High-level ontology development based on models. This would map out and help the processing of inputs using concept lists, class hierarchies, linguistic models and linkage of concepts.

This would allow us to assess and refine our approach against the data sources, further bolstering our understanding of coverage, inconsistencies and correctness.

4

Testing

We would support CQC in end-user testing with inspectors and NCSC. This included guidance on how to test and produce analysis of end-user feedback.

The output: a report detailing the feedback and potential effectiveness of a full system.


THE DIFFERENCE WE MADE

We delivered the planned benefits. This helped CQC to identify areas for development and provided immediate wins such as clarification of the end-user and their requirements.

From our findings, we've started to develop a library of code relating to machine learning for more efficient working.

LOOKING FORWARD

The Stage 4 steering group were keen to discuss our recommendations for the future and have asked us to share more ideas with them. We have been working internally with a multi-disciplinary team to develop a full proposal.



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