

Al and ML in the Public Sector: Could it be the Holy Grail?

Digital Leaders Webinar – Wednesday 25th September 2019



Introduction



Growing list of Public Sector organisations undergoing digital transformation



UK Visas and Immigration













Department for Work & Pensions









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History of Al



Industrial Revolution (approx. 1750 and 1850)

The industrial revolution gave rise to a number of significant inventions:



Loom with Kay's Flying Shuttle one weaver could handle the job

John Kay's Flying Shuttle increased the speed of weaving for the textile industry



Thomas Newcomen's steam engine cleared water from mines, which gave textile manufacturers and industry pioneers access to coal-powered machines



James Watt's steam engine invention went one step further and powered railroads and steamboats as well as ever-more-efficient cotton mills

1750 to 1850



Industrial Revolution (approx. 1750 and 1850)

Cotton mills rose dramatically in a very short space of time: from

2 to 666 in 1790 in 1821 By the late 1700s cotton production in Britain would account for 16% of exports; by the early 1800s this figure would multiply to around

> 42% of exports

Source: www.historylearningsite.co.uk



Artificial intelligence has been in existence for over 60 years!



Technology limiting the accuracy and proliferation of AI solutions

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What is AI and What is not (Cognizant view)?



Disambiguating Terminologies



Any technique that enables computers to mimic human intelligence, using logic, if-then rules, decision trees, and machine learning (including deep learning)

A subset of AI that includes abstruse statistical techniques that enable machines to improve at tasks with experience. The category includes deep learning.

The subset of machine learning composed of algorithms that permit software to train itself to perform tasks, like speech and image recognition, by exposing multilayered neural networks to vast amounts of data



Application of AI



Applications of Al

- Predicting Adverse Events
- Risk Prediction
- Classification
- Forecasting

- Customer Experience
- Intelligent & Optimized Content
- Decision Optimization
- Hyper-personalization
- Next Best Action



- Natural Language Processing
- Speech to Text
- Optical Character Recognition
- Text Extraction
- Video, Image & Sound Processing

- Anomaly Detection
- Pattern Detection
- Network Analysis
- Ontology Search
- Clustering



Applying AI in the Public Sector



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Cognizant's Approach to Al



Al Adoption Challenges in the Public Sector



Data Sharing & Effective Use of Data

Data silos and lack of understanding of the data



Ethics & Regulation

Regulation, best practice, standards and governance around ethics when assessing AI suitability



Legacy Culture Well established practices, processes and being risk averse



AI Platform & Scaling

Investment in AI environment and agile practices for scaling AI



Civil Service Education

Education around AI and potential for more value add work for the civil service



Technical Skills General skills shortage in Al



Procurement Mechanisms Algorithms are treated as IP. Off the

shelf algorithms require customisation thus creating vendor lock-in.



Cognizant AI at Scale Case Studies



Transforming call center experiences

Drug Seekers from EMR Records	Speech Analytics for a leading Financial Services Company	Call Center Sentiment Analytics for Consumer Finance
Drug Company	US Bank	UK Bank
 Drug Seeking Behavior of patients costs the Healthcare eco-system around \$12,100 Per member per year, and maximum death in beds. Phrase Based Extraction: The Bag of Words were created based on the four dimensions viz. Drugs they abuse, Behaviors and symptoms that are exhibited by the Drug Seeking Patients, Diseases and Conditions that are reported by Drug Seekersetc. 84k Drug Seekers identified which translates to ~\$60mn USD worth saving 	 Improved call transcription quality using module from Clarabridge for Speech analytics. 2. Predictive analytics to predict future customer behaviour by analysing sentiment 3. Natural language processing capabilities are used to classify data, structure insights, and create sentiment measures The solution in production is built using Text Mining and ML 	 Leverage A-I techniques to strengthen analytical models that predict and prevent customer complaints with the objective to: Drive down call volume which is at very high level today Cut down repeat calls Lay the foundation for Call handling through alternate channel like Web and Mobile Call center texts are mined using A-I techniques to derive the 'top Topics' customers are calling, complaining about & the top keywords used

• Predictive model had 84% accuracy identifying customer who are likely to complain



Our case studies of enhancing the customer experiences

Financial Service business

Developed a real-time recommendation engine (with response rate of milliseconds) that will provide customized offers/product ranking based on logistic regression models Personalize Offer Recommendation for a Leading Credit Card Company

Car manufacturer

- An analytics driven platform for automating marketing campaigns and a real-time engine for NBO-NBA
- Projected increase in sales of cars to new customers up to 6% & 300 % increase in upsell of new cars

Unified retail experience through Customer 1:1

Teleco business

Leverage AI applications to offer real-time information to customers enabling them to decide to go for alternate stores based on waiting time across stores Enhanced customer experience using real-time insights Improved decision making by implementing predictive analytics using data on the customer's browsing behavior and clicks on the support options namely chat, email and callback etc.

Leveraging Google Analytics Data on User Interaction For Decision Making



How Cognizant can help the Public Sector on their Al Journey



Supply of Data Scientists

Scalable data scientist capability across onshore, nearshore and offshore



Connecting AI to business outcomes Cognizant's Evolutionary AI capability - LEAF



Deploying to production

Al Framework for model deployment and serving. Ready for Continuous Delivery/Integration



Al-ready Data Platforms

Helping clients develop Feature Stores and alternative data models for AI scaling



Al platform proliferation

Providing architecture reviews across line of business deployments



Ethics and governance Operating Model design and build

