Artificial Intelligence in Support

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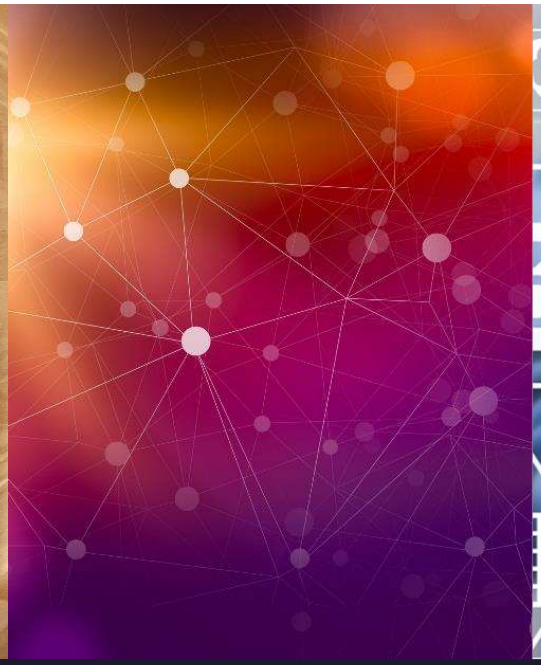
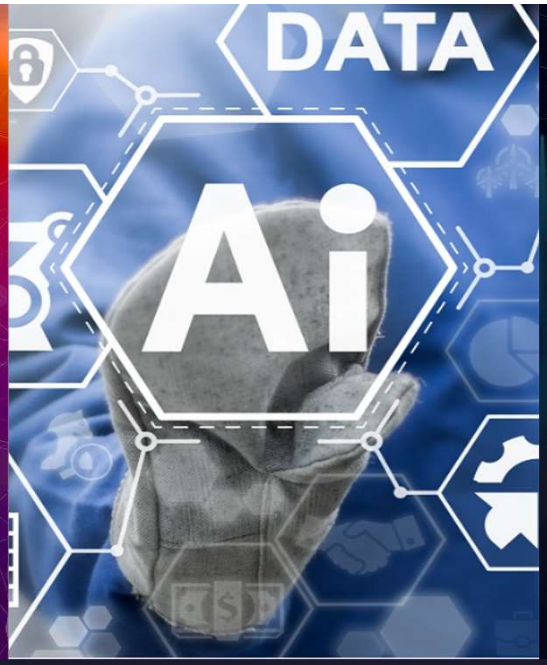
Executive Summary

"Artificial Intelligence is not about replacing humans.

It's about amplifying our potential, augmenting our capabilities, and transforming the way we work."

Satya Nadella, CEO of Microsoft.

Introduction

Artificial Intelligence

- Intelligence demonstrated by machines unlike the natural intelligence displayed by humans and animals
- Any device that perceives its environment and takes actions that maximise its chances of successfully achieving its goals
- Machines (or computers) that mimic 'cognitive' functions that humans associate with the human mind, such as 'learning' and 'problem solving'

Machine Learning

- Machine Learning (ML) is the study of computer algorithms that improve automatically through experience without the need for explicit programming
- Algorithms that make predictions or decisions without being explicitly programmed to do so
- The key to recent advances in the real-world application of AI

Why

AI/ML in Solution Support

Background

The business of any Support Organization is to produce and distribute knowledge to customers. A lot of knowledge is held in product documentation, knowledge base articles, our case documentation methodology PULSE and in form of historical case transcripts.

This information is easily accessible through search engines and in house create processes like the Incident Solution Matching. The work of an engineer is to consistently read all that information, match it to the scenario in hand and re-phrase the responses to customers - which takes times and effort.

Value

Supporting a software solution is a cost for the company, but also a key differentiator, considering customer interactions with support influences the perception of the quality, usability, efficiency and completeness of the solution.

This directly influences KPI's like NPS (Customer Net Promotor Score) and the case interaction KPI CSAT (Customer Satisfaction Indicator).

Value (continued)

The proposal is to augment/pre-populate response memos for customer issues directly in our Customer Relationship Management System.

Those memos include historical information about the customer and research/analysis of the reported problem, generated by Machine Learning.

The engineer's task is to review the information, check for accuracy and completeness and send it to the client in a human-in-the-loop[a] AI approach.

This directly contributes to our mission of *"Delighting customers – always"*

[a]Andrew Ng – DeepLearning.AI

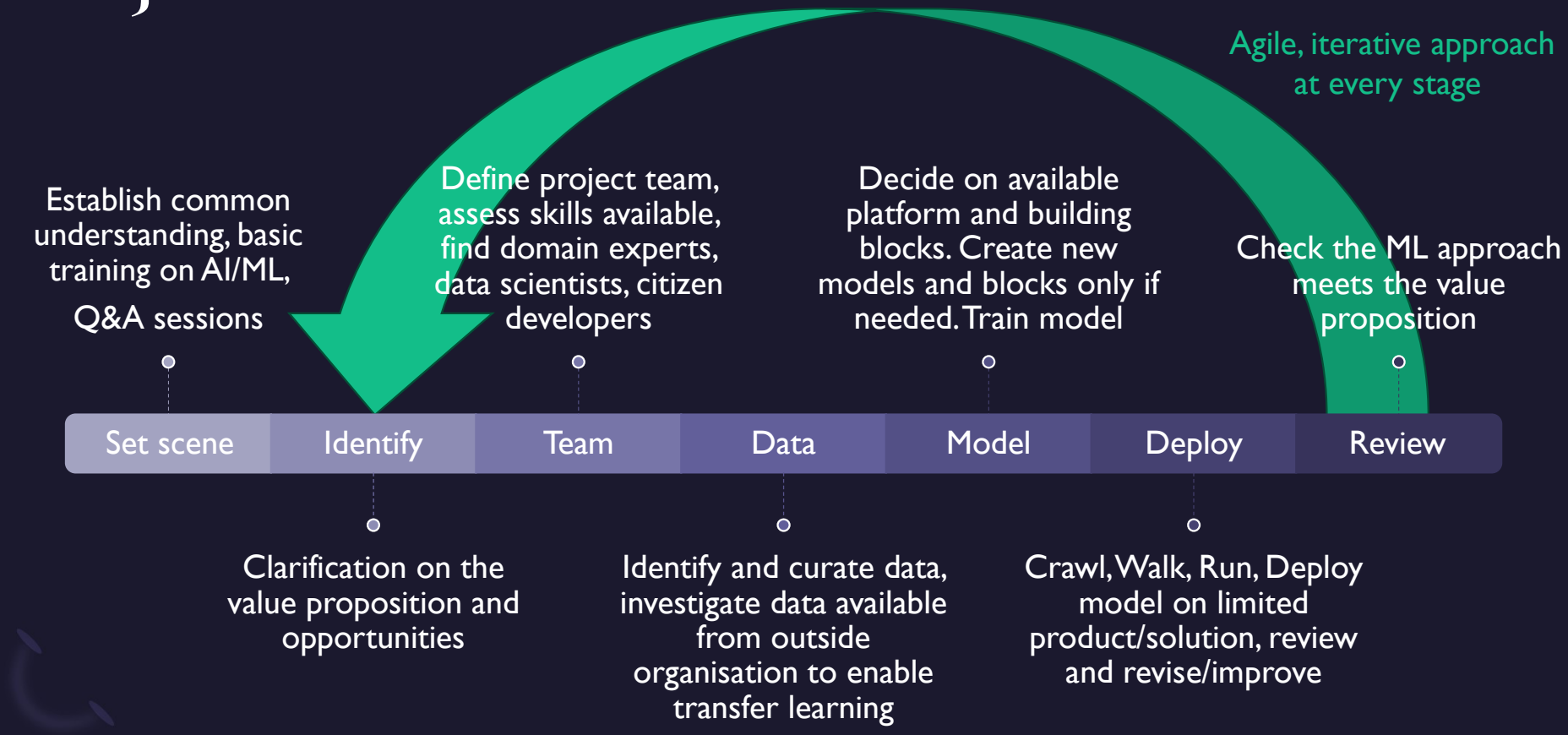
Benefit

- Improve the quality and completeness of responses to customer requests, incorporating previous customer interactions on earlier reported issues
- Reduce the research time for known issues and therefore speed up response time
- Put information directly in the line of sight, of the engineer as part of the already existing workflow – process compliance
- Frees up time for engineers to analyze more complex scenarios

The way to get started is to quit talking and begin doing.

Walt Disney

Project outline



Set the scene

Acceptance of AI/ML in our born digital business is already high. To ensure the entire LOB adopts and receives value out of AI and ML we are *launching a communication initiative*.

This covers basic training on AI and ML and includes all levels in our teams from engineers to leaders of our organization.

We want to establish regular communication between the Project team, the AI team and the LOB, project updates and Q&A sessions.

Identify the value proposition

As outlined in the benefit slides – the value of adopting AI/ML can split into categories

Customer:

- More efficient, personalized and complete responses to support requests, including customer's history

Engineer:

- Improved augmented workflow, makes the research task easier
- Less task switching – information is direct line of sight

Company:

- Improvement in Customer NPS and satisfaction score, customer retention – *ref: T-Mobile adoption of AI*
- Improved employee satisfaction by simplifying research task during customer interactions

T-Mobile

AI PLAYS SUPPORTING ROLE FOR CUSTOMER SERVICE REPS

When T-Mobile customers contact the company through phone or online chat channels, they trigger AI software that pre-populates information about the customer. This includes context about what the customer is reaching out for, such an activation upgrade or service problem, as well as their billing history and other pertinent details, to provide agents with as close to a 360-degree view of the person as possible. Working with the information provided in real-time by the AI, the rep then works through the customer's inquiry.

Ref: https://www.cio.com/article/193571/at-t-mobile-ai-plays-supporting-role-for-customer-service-reps.html

Building the team

Identify skills we have in the organization but also focus on different types of team members with the following skills:

Business
- See the opportunity, understand the problem domain
- Understand the organizational strategy
- Can identify potential bottlenecks the project can address

Technology
- Data engineers
- AI/ML experts / data scientists

Make decision what skills we can learn internally, what skills need to be hired in.

Revisit the team structure according to the stage of the project – more generalists at the beginning of the project and more specialists at a later stage.

The data

Getting data in the right format and the right quality. This will be one of the core tasks to create data for this and future AI projects and studies. Experience has shown this task is expensive but done right, can set the foundation for a data platform which enables a digital ecosystem.

The steps for this tasks are:

Ingestion of data

- Knowledge Base Articles
- PULSE information
- Historical communication with customers
- Product documentation
- Customer history

Curation of data

- Remove anomalies
- De-duplication of data
- Anonymize data

Integration

- Combine the data from different sources
- Create a platform/data lake for re-usable data

The Model

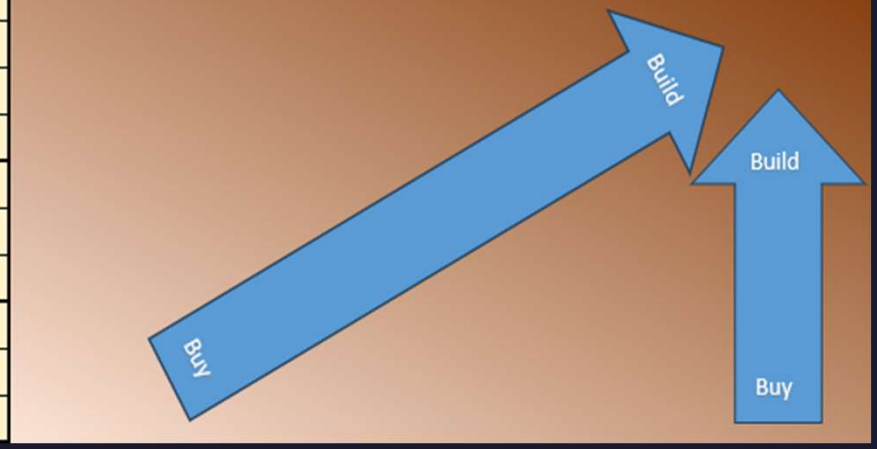
Based on

- Organizations Capability
- Type of application

Decision needs to be taken to either

a) buy a model to train on the data
b) buy a model and use transfer learning to add to the already trained model
c) build a model from scratch

	Organisation Capabilities	Type of application	Generic Common in many Organisations	Industry specific Variety of common solutions	Business Specific Strategic activities, different to competitors	Bottleneck Technical, Economical, Strategic
Uncuncious comptetent	**Excellent** Know what you are doing, data engineering, train models	10				
		9				
		8				
		7				
Concious competent	**Middle** Competent, limited, no concentrated hub	6				
		5				
		4				
Concious incompetent	**Nascent** Reliant on Outside organisations	3				
		2				
		1				



The Model (continued)

Artificial Intelligence and ML can be trained in different ways depended on the data. For our application we will use the following learning/training approaches:

1. Supervised Learning
   - Previously labelled data is used to train the model.
     In our application – Knowledge Base Articles, PULSE information

2. Unsupervised learning
   - Unstructured data – AI/ML can identify patterns, clustering algorithm
     In our application – Case memos, Product documentation

Deployment

Case studies have shown the deployment of AI/ML applications need to follow careful steps. The approach we want to take is the Crawl, Walk, Run methodology used by Vodafone in their AI rollout.

- **Crawl:** Limited deployment to ensure the ML implementation brings the value it set out to. This also enables continuous feedback into the Agile development process to improve the application
- **Walk:** Deployment to a wider community, still gathering feedback of the efficacy of the application and further improve aspects of the application
- **Run:** Deploying to the entire organization, still monitoring feedback and feed it back into the next version of the application.

The importance of experimentation, failing and improving applications is at the center of the agile development methodology of AI/ML projects.

Review

One of the fundamental differences of AI/ML ready business to conventional organizations is to become and ambidextrous. This means to continue the focus on the conventional business on one side and in addition to give the autonomy for experimentation and adopting an explore culture, fostering adaptability and breakthrough innovations.

Another aspect is the change in culture within organizations, moving towards seeing data as an asset, getting broader buy in from the organization, retraining/retaining talent to build the competencies and capabilities in our company.

This also has strategic implications – creating the opportunities for creating new business values and business models.

Within this context – exploring moving from "augmented memos" to "fully automated responses" could be an opportunity worth investigating.

Risks

The adoption of AI/ML in our organization has 3 categories of risks

1. Risks within the AI/ML implementation
   - Bias of the training data will be reflected in bias of the output of the model
   - Potential for hallucination and opacity – the output cannot be clearly traced back to the source and can be incorrect
   - Measuring progress – moving from Key Performance Indicators (KPIs) to Objectives and Key Results (OKRs)
2. Organizational risks
   - Lack of acceptance/buy in from the employees
   - Finance – budgeting for resources, evaluating investments
   - Human resources – upskilling, hiring, motivating and retaining talent
   - Information infrastructure – building and maintaining the platform AI/ML can be built on
   - Compliance - transparency of algorithms, data privacy etc.
3. Ethical risks
   - Unforeseen consequences – engineers a relying too much on AI/ML
   - Customer pushback – not accepting the augmented responses

Summary

This AI Executive summary was put together as part of taking part in the London Business School "The Business of AI" programme.

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Thank You

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