

**AI4SupplyChain – To Enhance
Efficiency, Improve Security and
Reduce Cost**

Agenda

- Introduction to Teesside University (Gilly Hall)
- AI4SupplyChain – To Enhance Efficiency, Improve Security and Reduce Cost (Professor Alamgir Hossain)
- Digital City – Access to Digital Expertise (David Dixon)
- Teesside University – Support for Business (Gilly Hall)

Teesside University - Core Specialisms

Health & Wellbeing



Learning for the 21st Century



Digital & Creative Economies



Resilient & Secure Societies



Sustainable Environments



Universities provide access to...



What we do:

- *Assist technology, digital and digital creative businesses innovate & grow*
- *Assist wider sectors explore how digital and technology can help them become more productive and profitable/*

How:

- *Fully funded bespoke support and programmes*

Contact Information

Contact us to make an appointment or for further details:

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Accessing Teesside University !



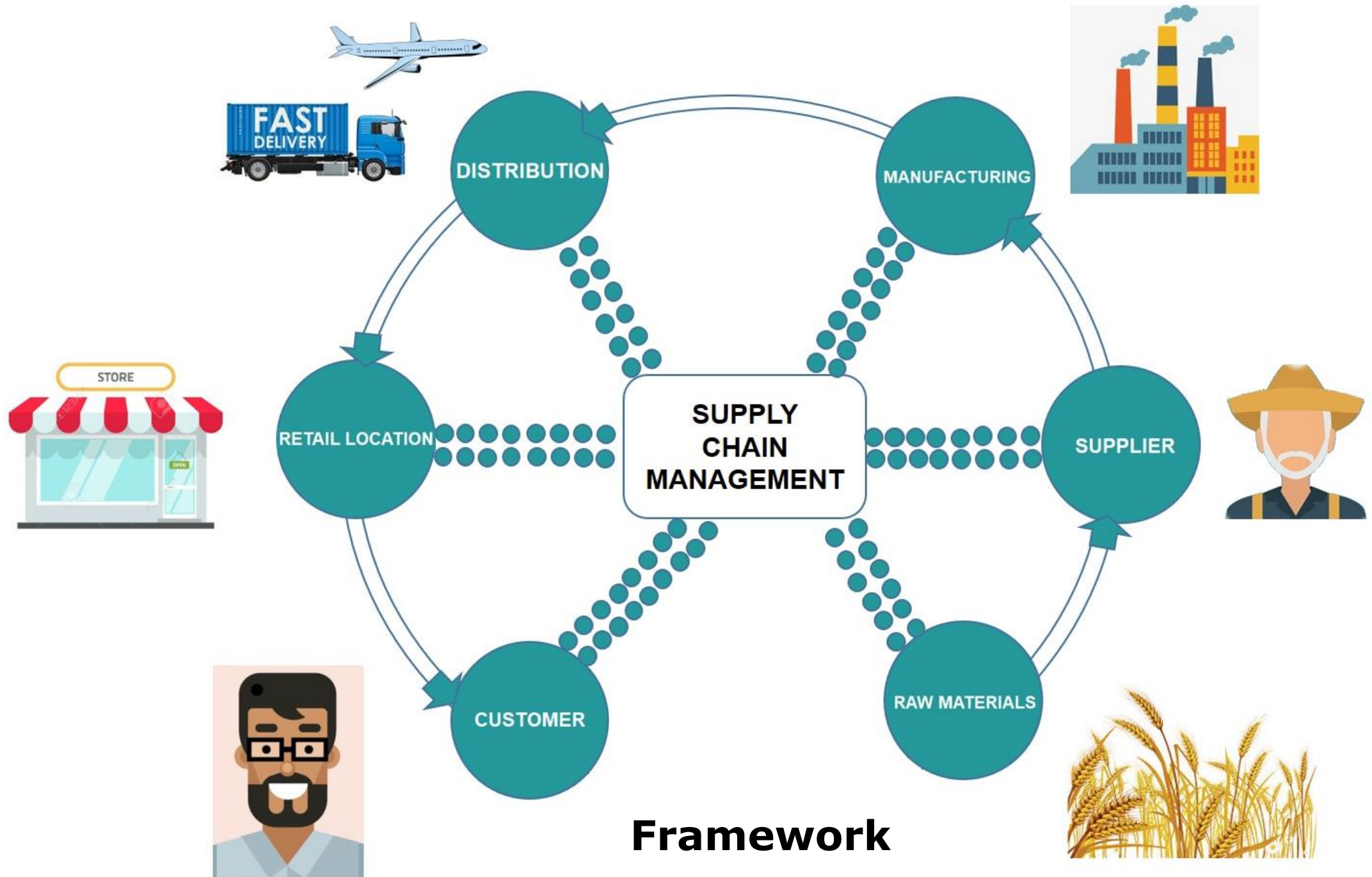
- School and Central Resources
- Support with Funding Applications
 - Identifying expertise
 - Identifying partners
 - Identifying funding calls
 - Funding applications
- Customer First Accreditation

AI4SupplyChain

To Enhance Efficiency, Improve Security &
Reduce Costs



Prof. Alamgir Hossain
Professor of Artificial Intelligence (SCDT)
Head of Digital Research and Innovation (NHC)
Teesside University, UK



Framework

Supply Chain Process Layers

Requirements
Planning

Sourcing/
Procurement

Manufacturing

Quality
Assurance

Logistics &
Delivery

Artificial Intelligence can be Used at Each Layer

**Big Data
Analysis**

**Natural
Language
Processing**

Prediction – Weather, Traffic, Supply & Demand

Optimisation – Enhance Efficiency,
Productivity, Accuracy & Increase Revenue

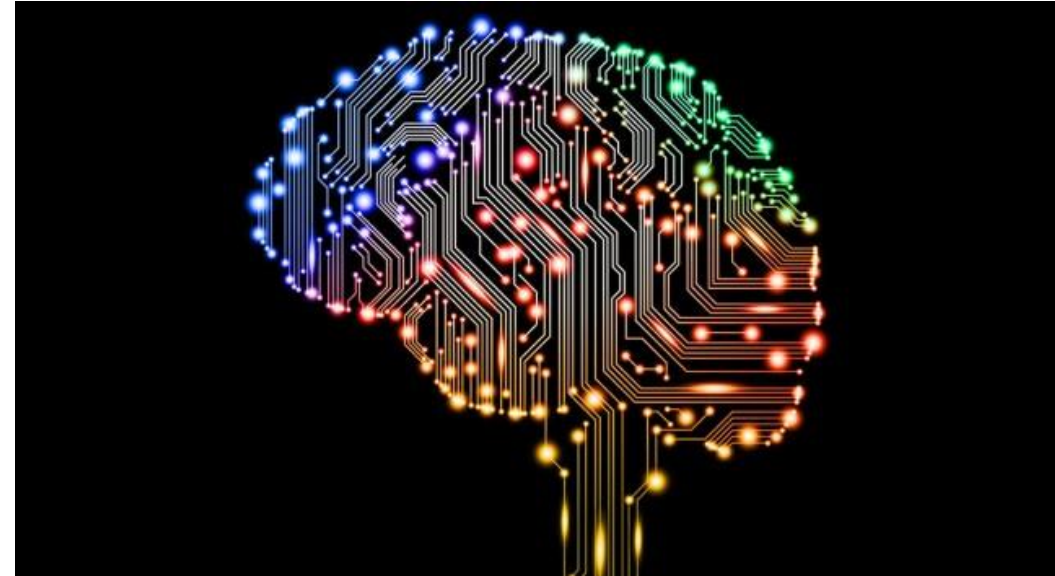
Support – Chabot, Communication & Decision

**IoT
Security
Block Chain**

Why AI?

What is AI?

The computer systems able to perform tasks normally requiring **human intelligence**, such as visual perception, speech recognition, decision-making, translation, etc.



Nature Inspired Intelligence - physical, chemical, social and biological systems



Inspired Intelligence

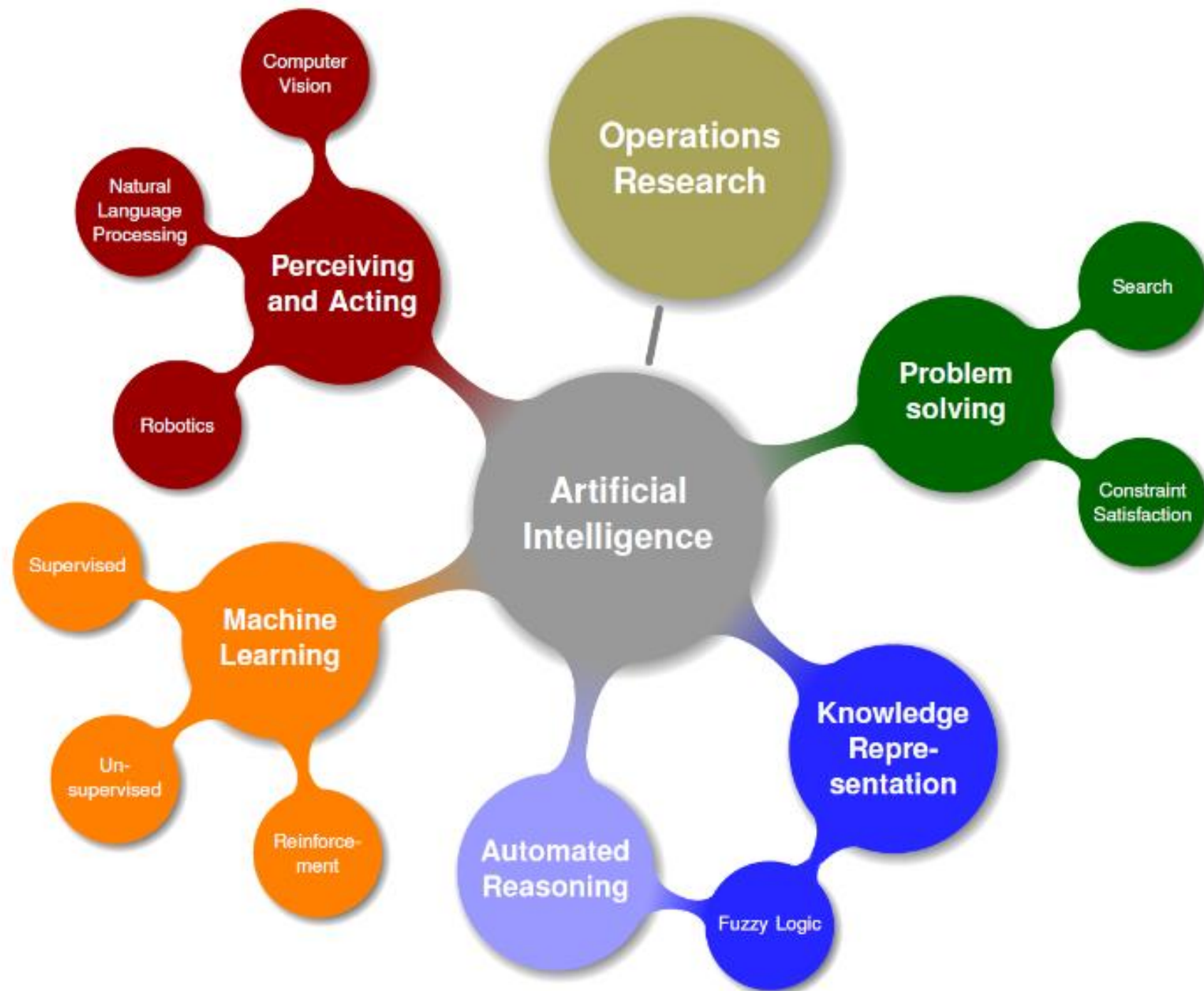
The logo for 'Inspired Intelligence' features a stylized tree. The canopy of the tree is a detailed, white line drawing of a human brain, showing its characteristic gyri and sulci. The trunk of the tree is a simple black line, and the roots are also depicted as a network of black lines extending downwards. The text 'Inspired Intelligence' is written in a clean, black, sans-serif font, with the tree's trunk acting as the letter 'I' in 'Inspired'.

Fusion **Machine Learning** **Optimisation**

Fusion of rules to find solutions
*Find an orange from a basket of Fruits

Learn from Knowledge to solve the problem
*Exactly the way we learn & recall to perform our jobs

Optimise the solution for contradictory objectives
*Optimal drug: maximise treatment benefit & minimise side effect



AI Helps in Generating Knowledge from Data



Data

Numeric

Text

Pictures

Video

Audio

Hybrid

Preprocessing

Reorganisation

Filtering

Reconstruction

Standardization

Feature Extraction

Mining

Image
processing

Audio
processing

Processing

Classification

Clustering

Learning

Fusion

Optimisation

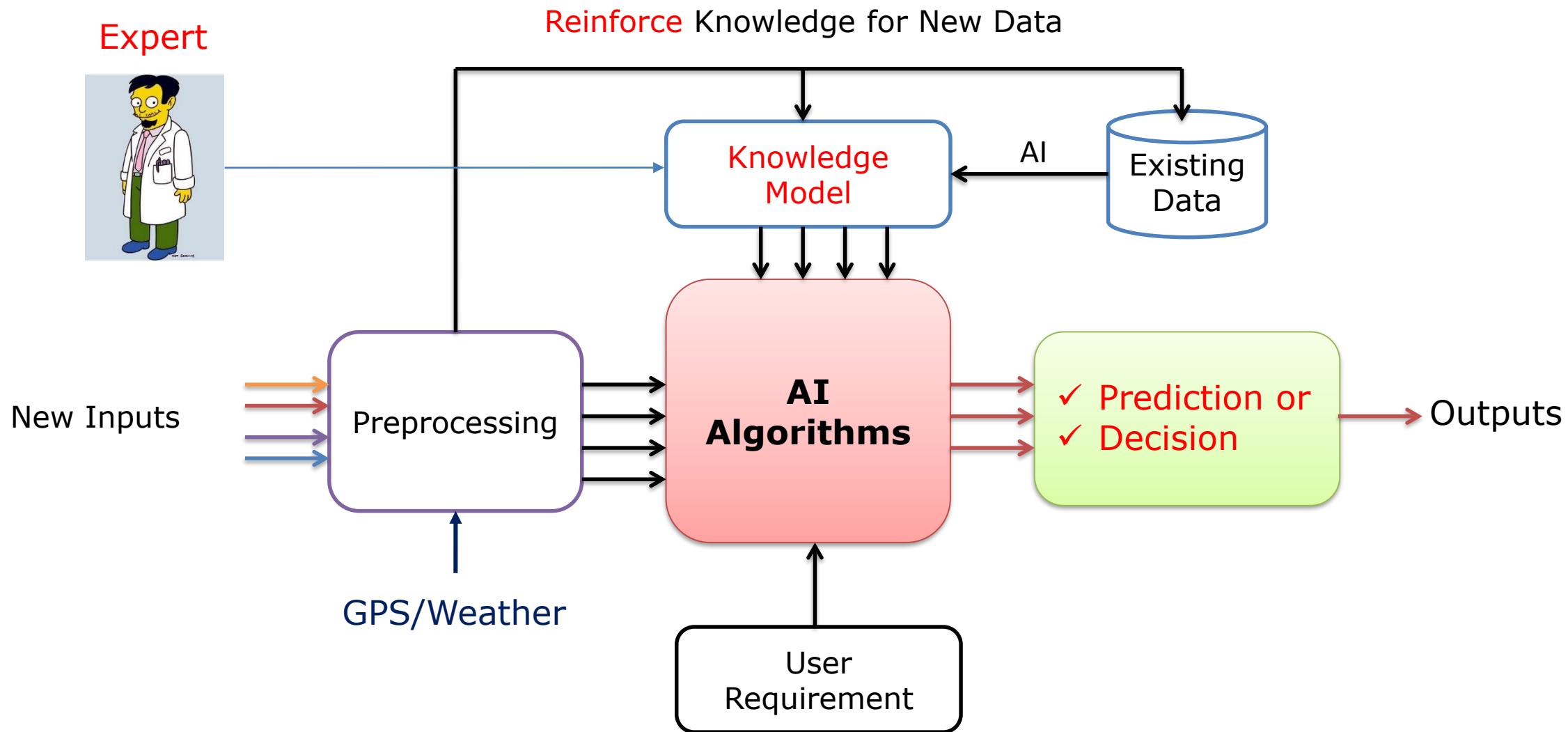
Visualisation

Knowledge

Identification

Decision

Prediction



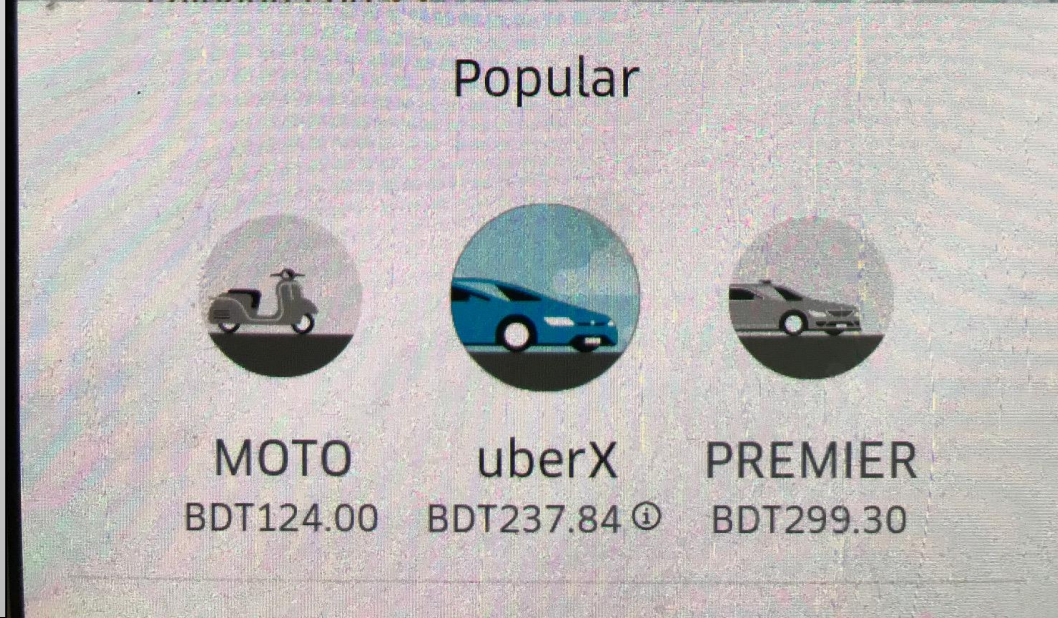
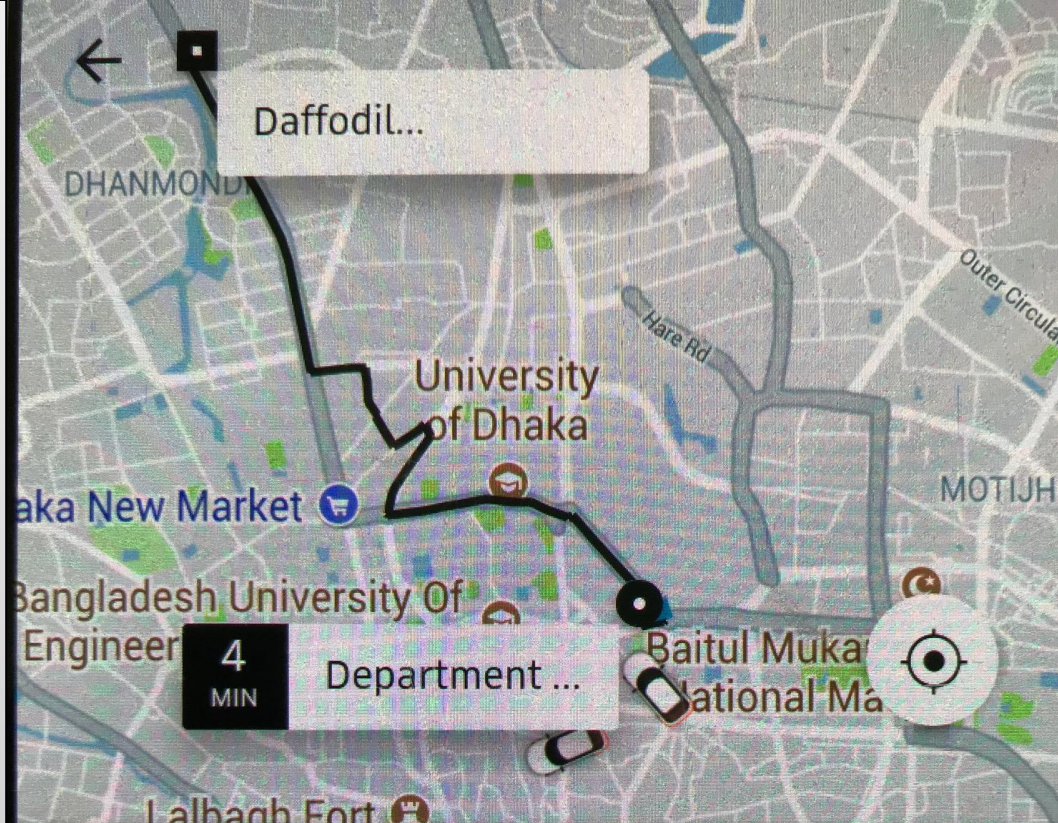
AI Helps in Prediction and Decision Making

Example

Example: UBAR

Research & Innovation

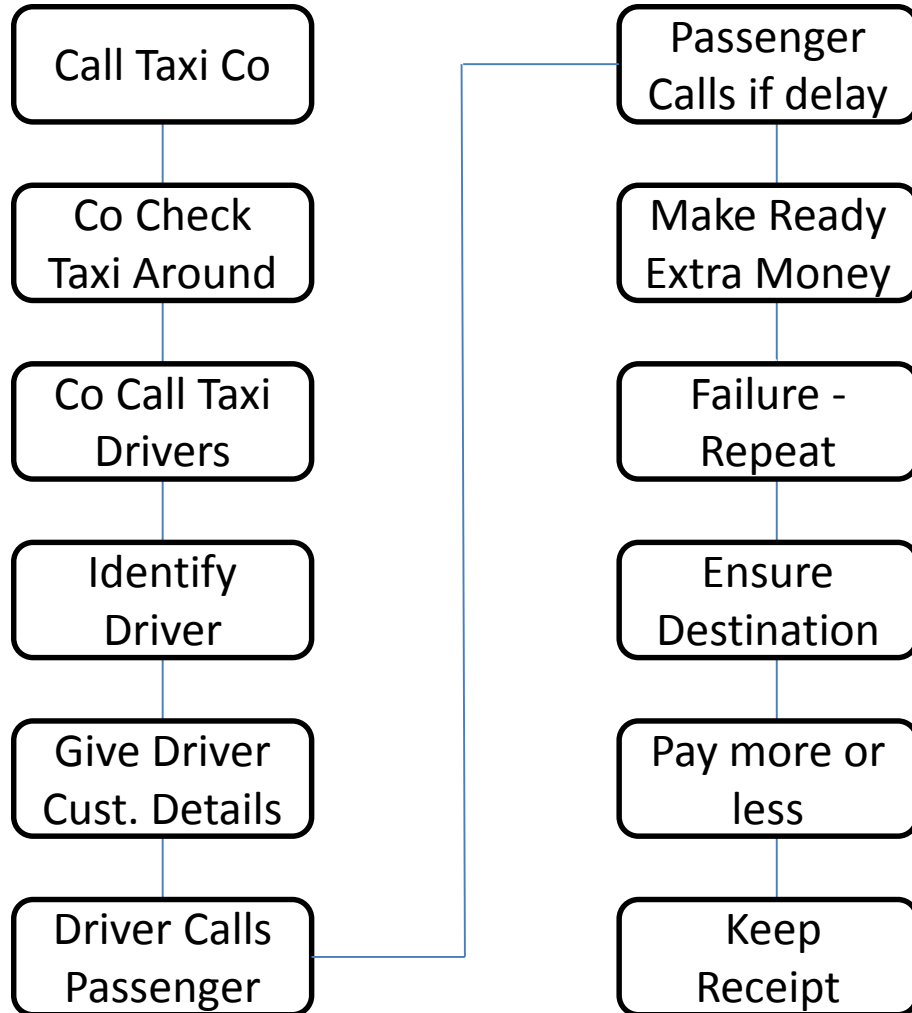
- Efficient Communication
- Optimal Cost
- Optimal path
- Improved Security
- Alternatives



Transformed real-world business process into a system

Automation – reduced human involvement

Steps



Traditional Taxi Company

Steps = 12

People involved = at least 3

Av Time: 15 min

Costs: High

Passenger can't see:

- **Taxi arrival time**
- **Cost**
- **Travel time**
- **Need hard copy receipt**

Traditional Taxi Supply Chain:



Total Cost: £12.00 + Total Profit Margin: £3.00 = £15.00 ← LESS EFFICIENT SUPPLY CHAIN

Modern Taxi Supply Chain:

Total Cost: £9.00 + Total Profit Margin: £4.00 = £13.00 ← MORE EFFICIENT SUPPLY CHAIN





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Thanks