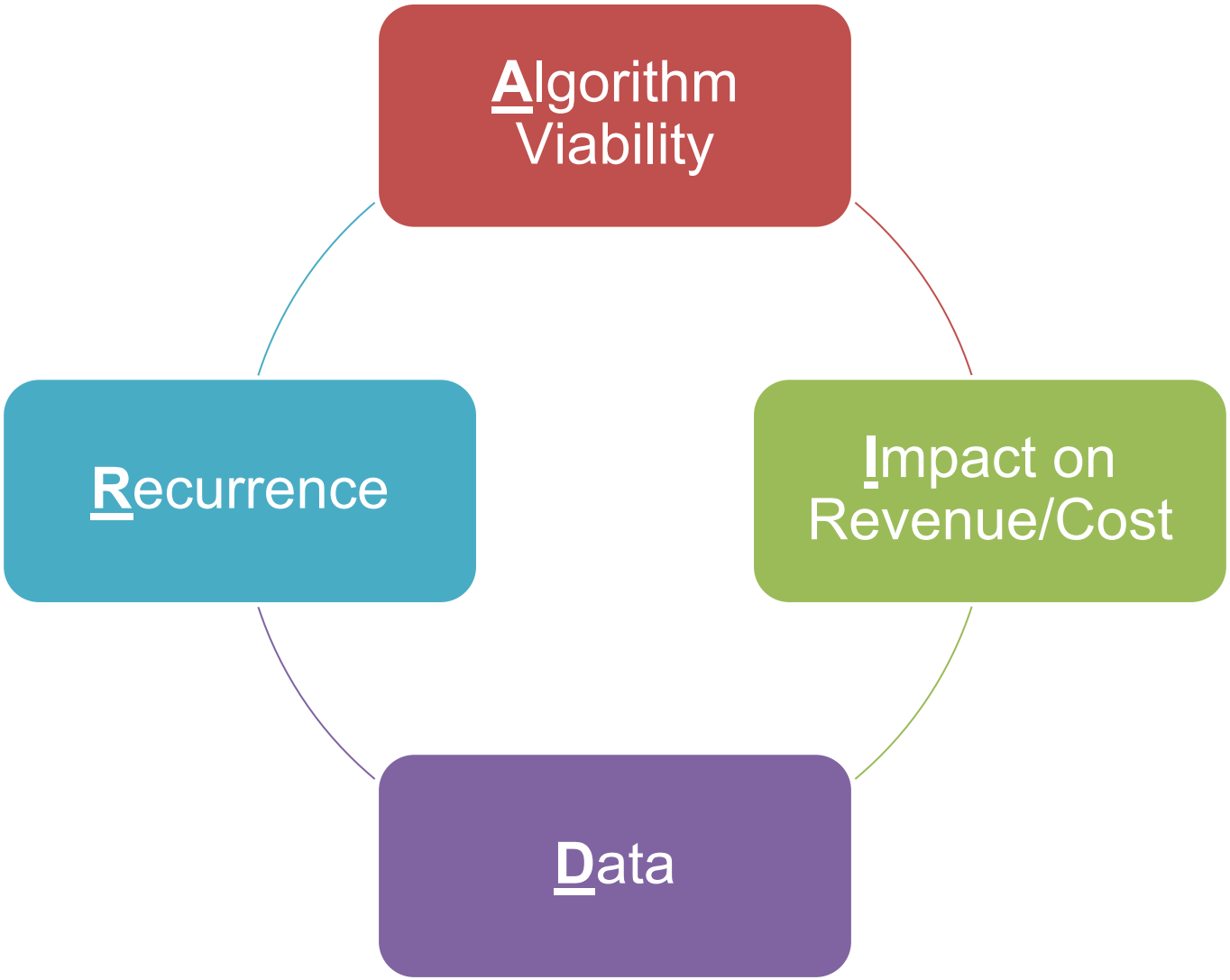
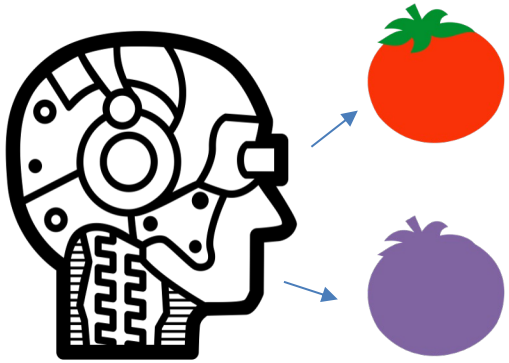
Building AI Solutions

AIDR Framework



Algorithm Viability

Is a state-of-the-art algorithm viable for the AI solution you are seeking?



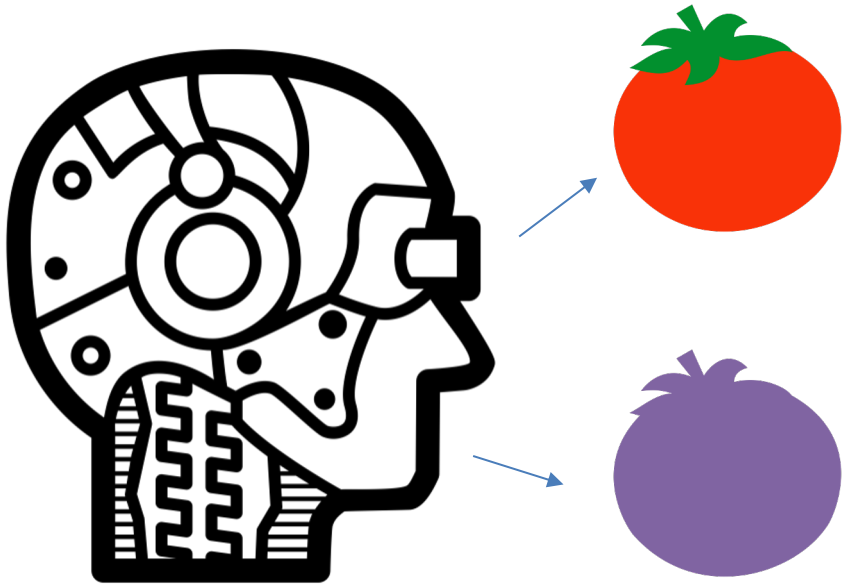
Close to reality

Not close to reality

Algorithm Viability

A machine which can read all books is not close to reality

Algorithm Viability



A machine which can identify rotten tomatoes is close to reality

Impact on Revenue/Cost

- Is the value proposition for the solution clearly defined?
- Does it impact revenue or save cost?

Data

- Do you have enough data?
- Is it useful data?
- How much of the data is annotated?
- If the AI solution is implemented, does the solution generate data that can be used to train itself?

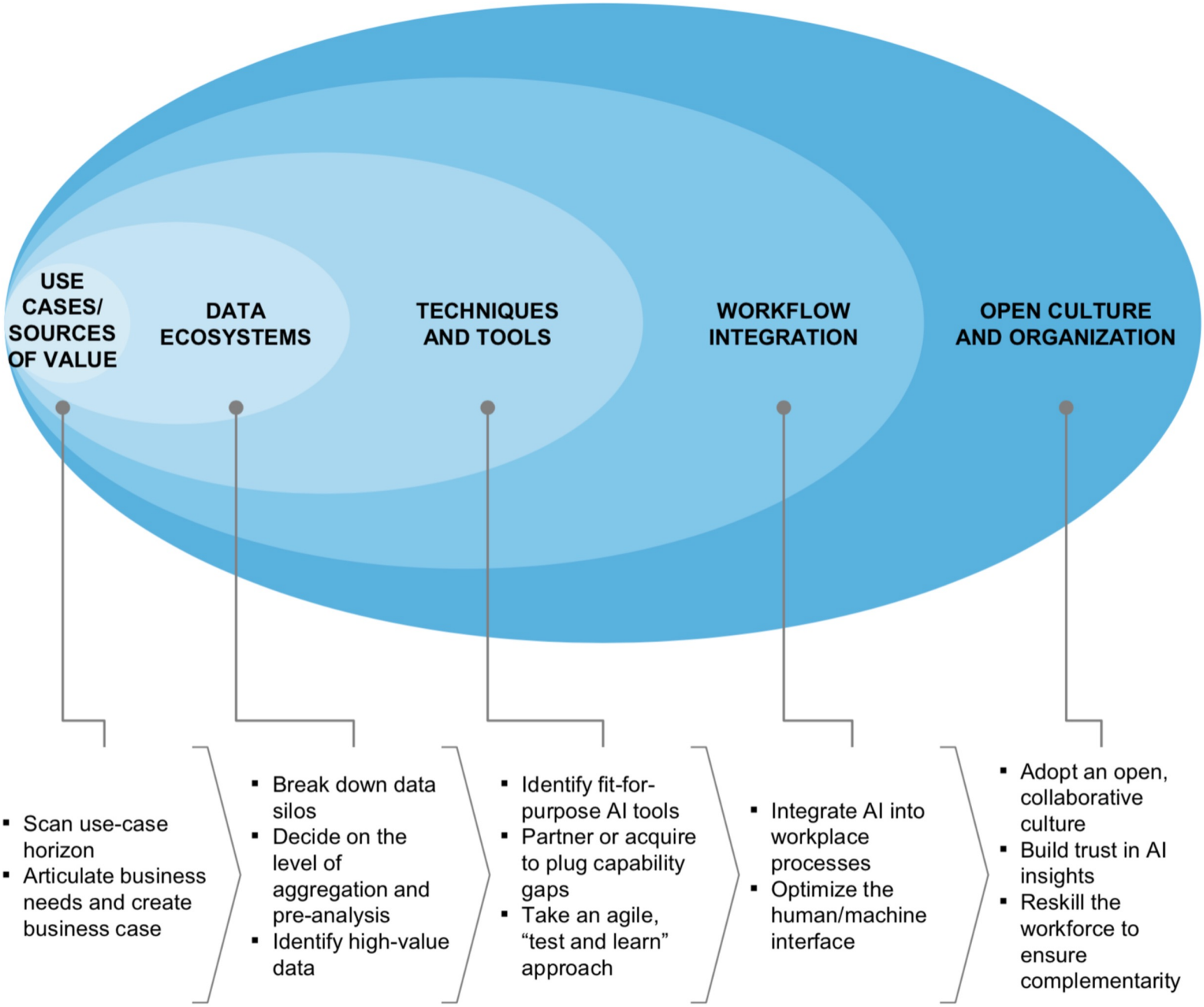
Recurrence

- Does the AI system automate a task that is performed by humans frequently?
- Is the task that will be automated performed hourly, daily, weekly, monthly, or yearly?

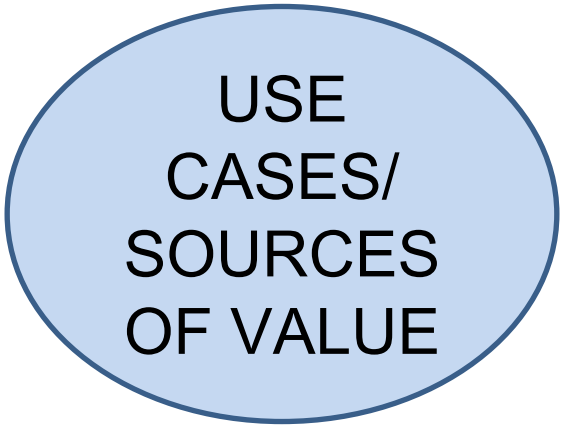
AIDR Framework

Before you build the AI solution, ask yourself these questions based on the AIDR framework. It can save time and resources. It should help you identify the right problem and the right solution with the right value proposition.

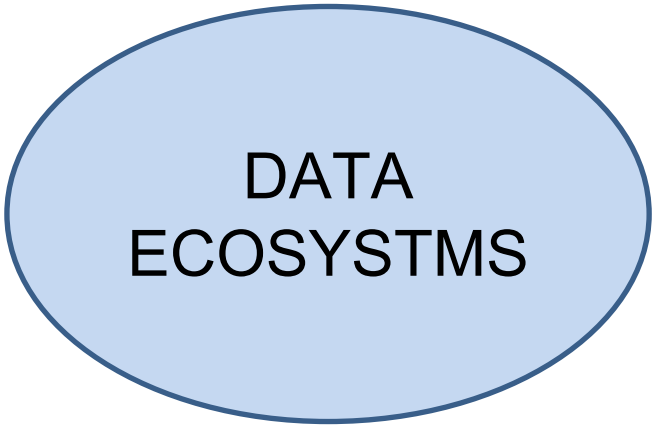
Building AI System for Customer Service



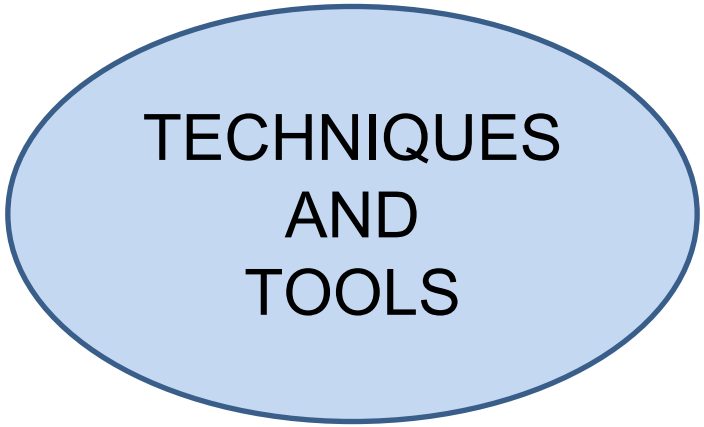
SOURCE: *The age of analytics: Competing in a data-driven world*, McKinsey Global Institute, December 2016; McKinsey Global Institute analysis



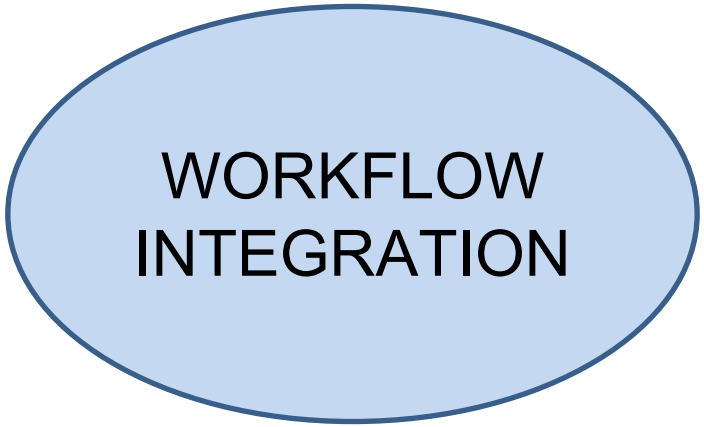
- Scan use-case horizon
- Articulate business needs and create business case



- Break down data silos
- Decide on the level of aggregation and pre-analysis
- Identify high-value data

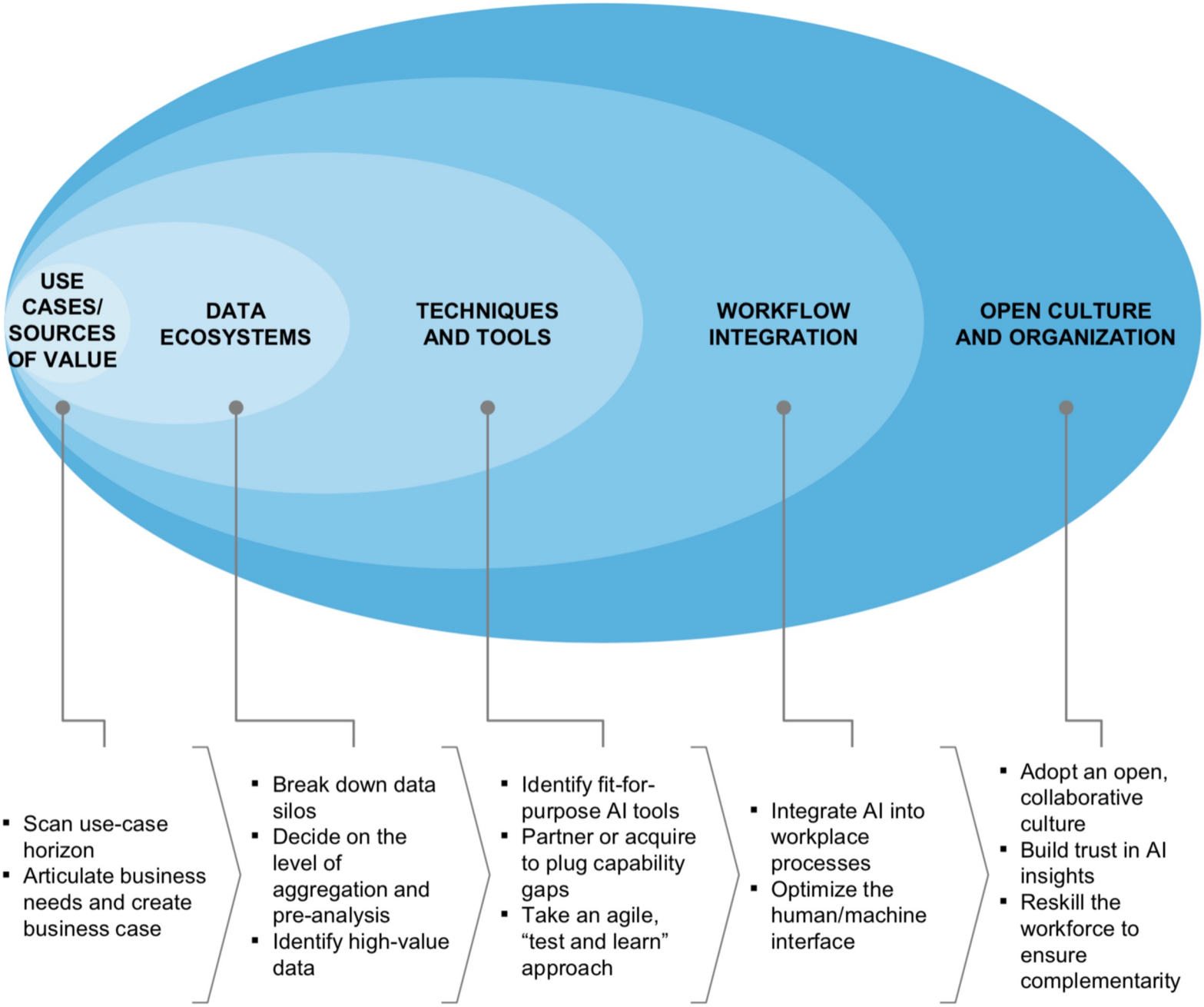


- Identify fit-for-purpose AI tools
- Partner or acquire to plug capability gaps
- Take an agile, “test and learn” approach



- Integrate AI into workplace processes
- Optimize the human/machine interface

- Adopt an open, collaborative culture
- Build trust in AI insights
- Reskill the workforce to ensure complementarity



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Customer Service Problem

42+ Billion customer service interactions a year

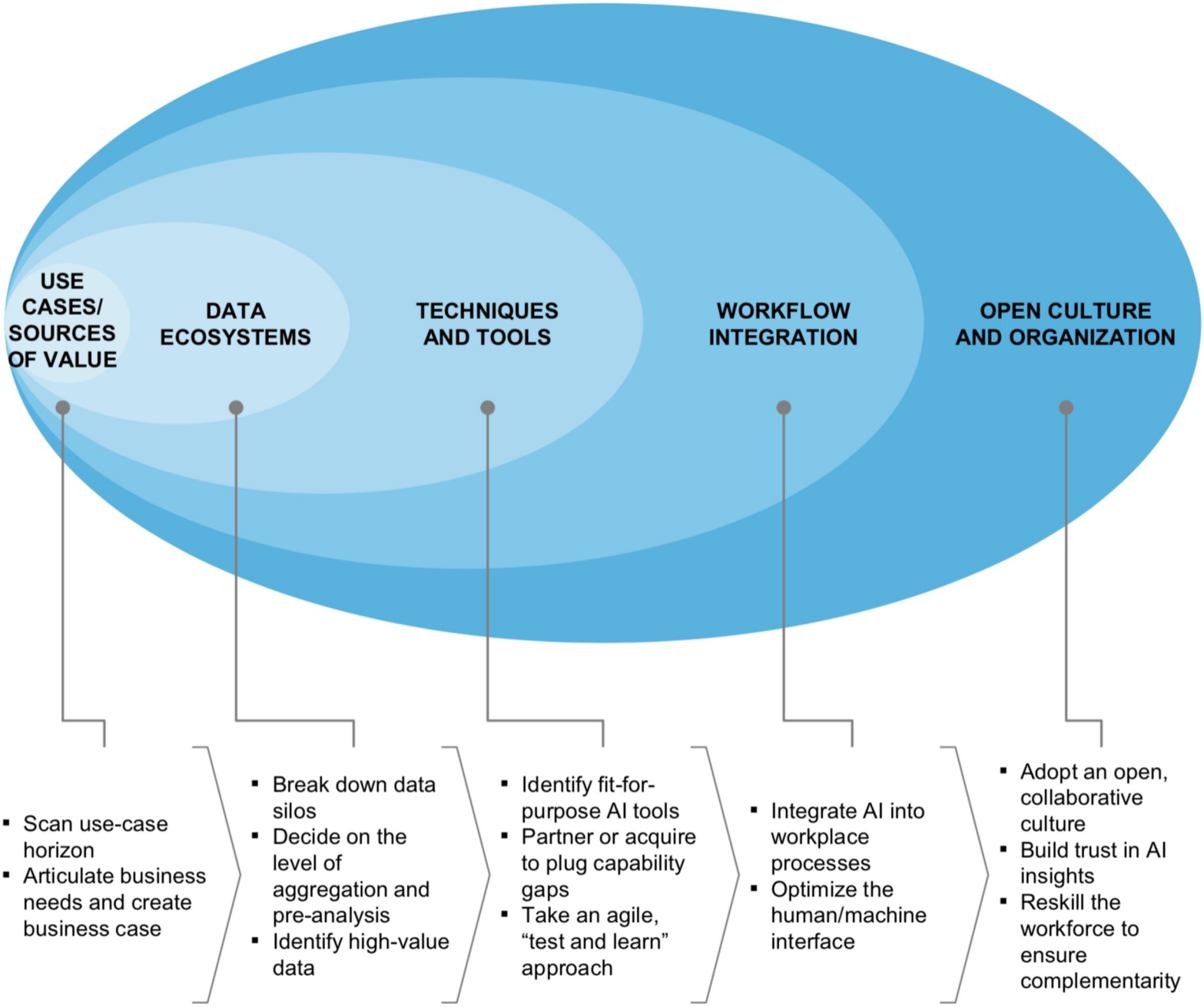
Too many calls/emails but not enough representatives result in poor service

Source of Value

Reduce Interactions with representatives by having end-users talk to “Intelligent Machines”

Reduce Handle Time for Service Representatives by enabling them to find answers using advanced Question Answering and Multi Layer Search System

Improve Efficiency of Managers by providing them with a unified platform for new information detection, knowledge management and analytics



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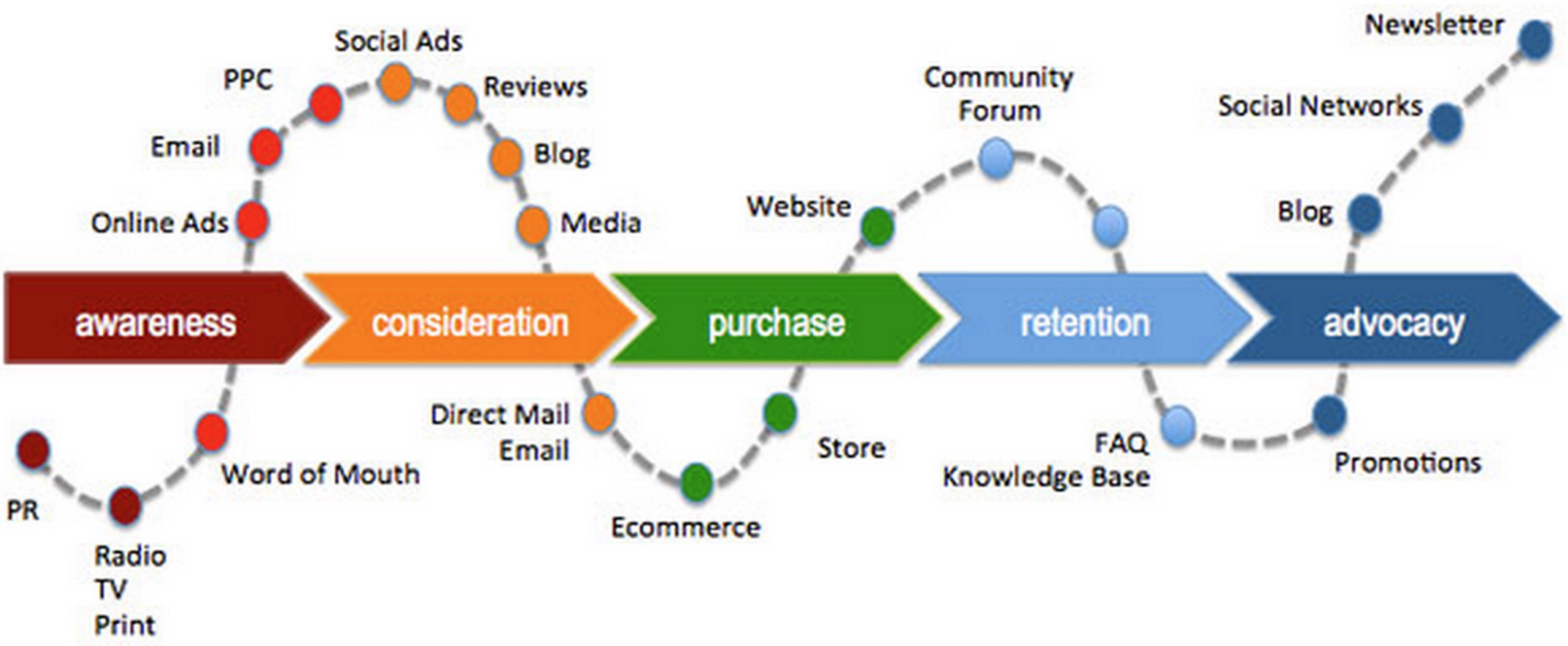
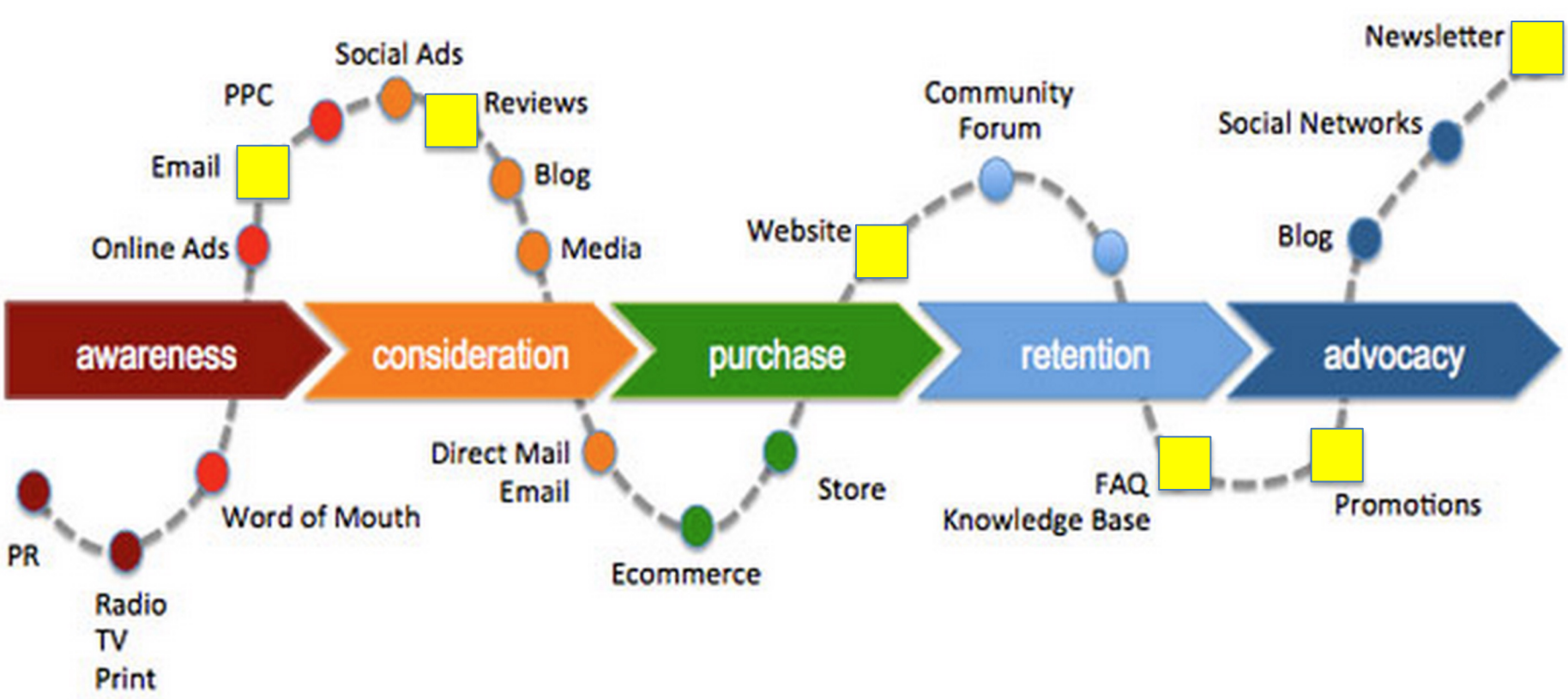
Customer Journey & Interactions





Customer Interactions

Customer Interactions

Live chat

Online chat forum

Social

Browse FB page

Tweet

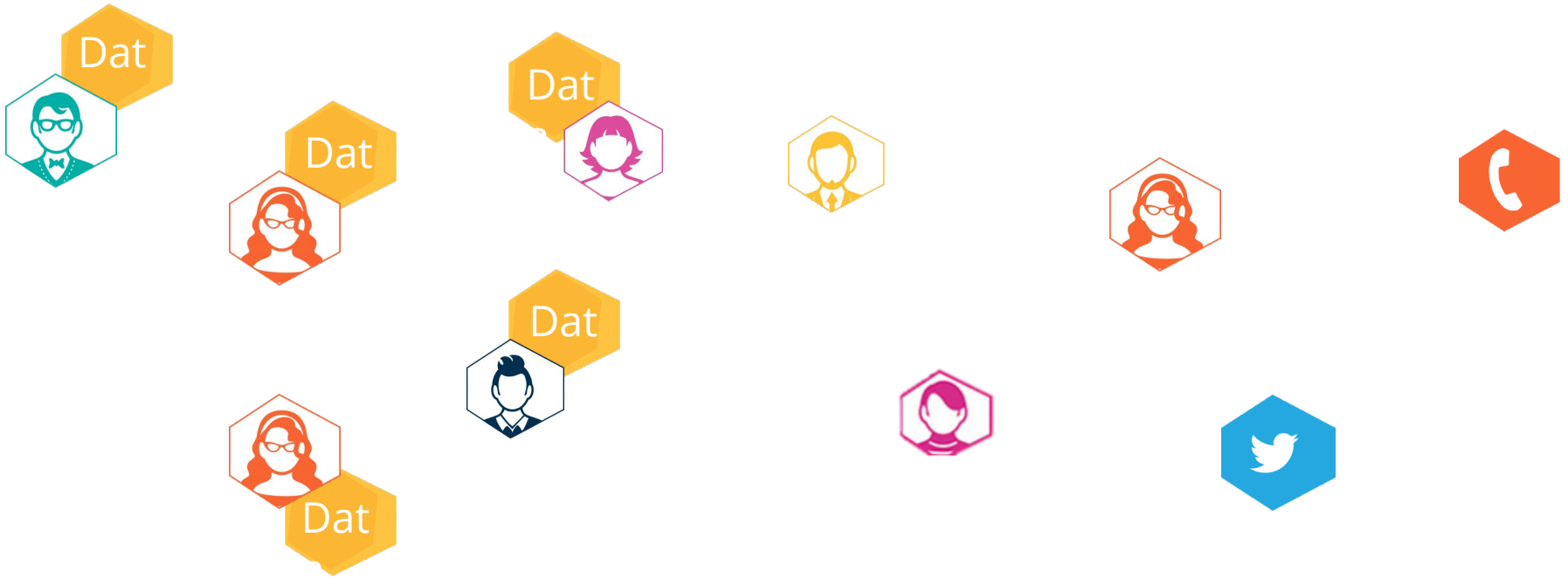
Telephone

Call customer support

Contact Center

Data Generated in Customer Interactions

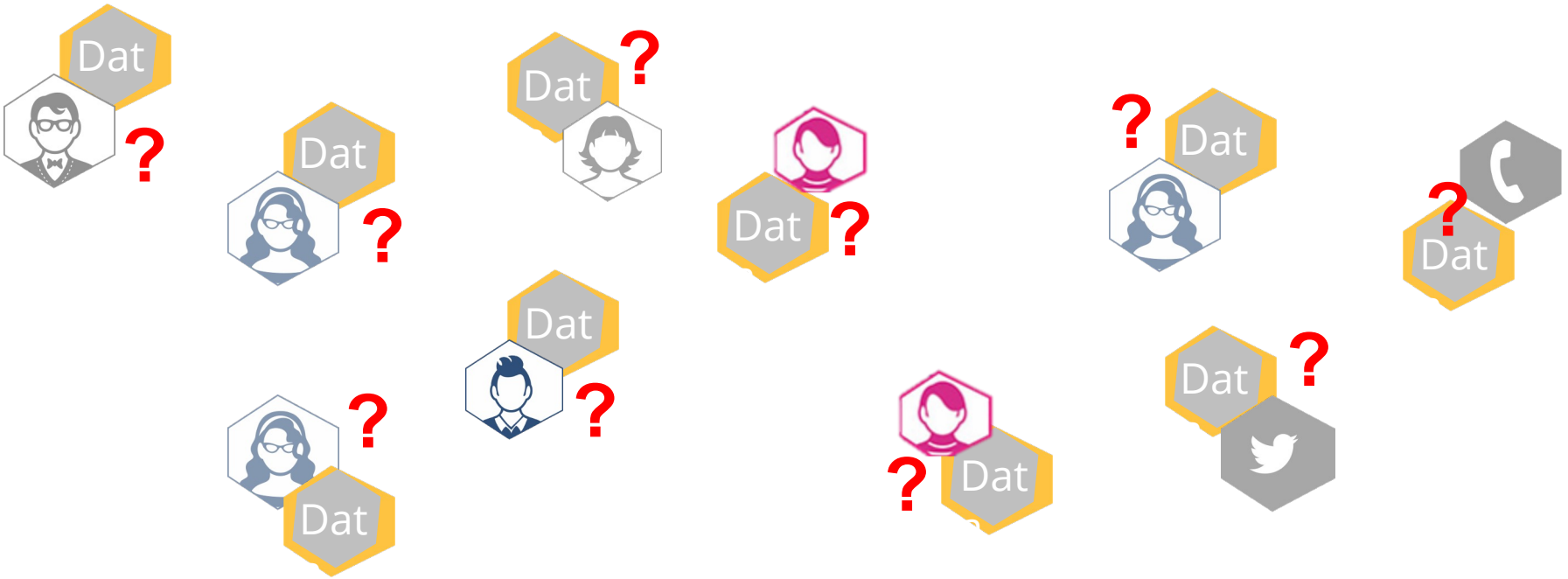
In Person Web Mobile Email Live chat Social Telephone



Contact Center

Can We Use Generated Data to Enhance Customer Interaction?

In Person Web Mobile Email Live chat Social Telephone



Contact Center

Artificial Intelligence Based Automation

In Person	Web	Mobile	Email
Predict the product purchase	Based on context pre-empt and display different product options	Rank the channel preference	Provide best automated response

Automation From Data

Unstructured Data

Structured Data

Ranking

- Automatically rank new piece of knowledge from community forum
- Rank the channel preference
- Predict the product purchase

Classification

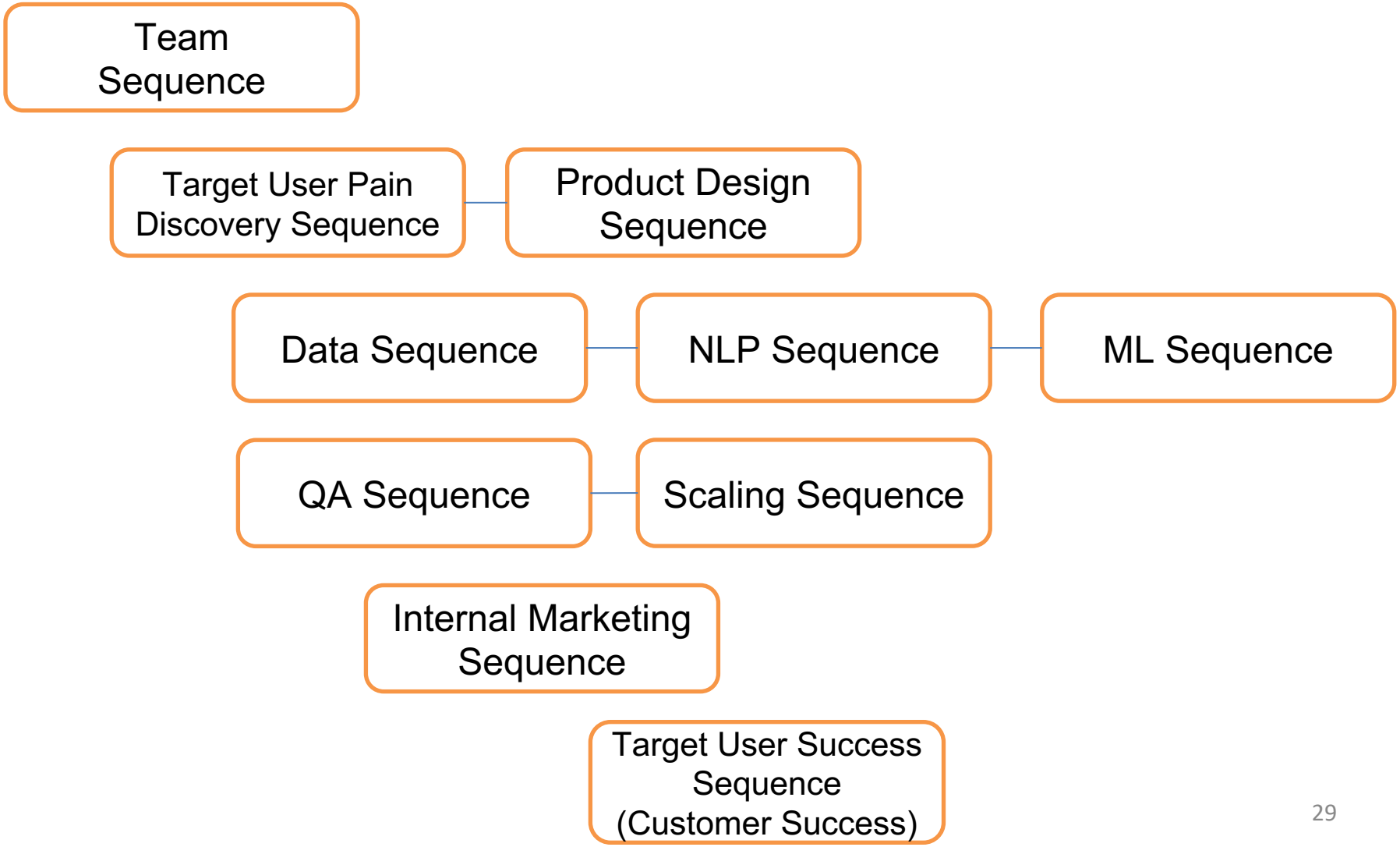
- Based on context pre-empt and display different options
- Provide best automated response
- Predict which agent to transfer

Clustering

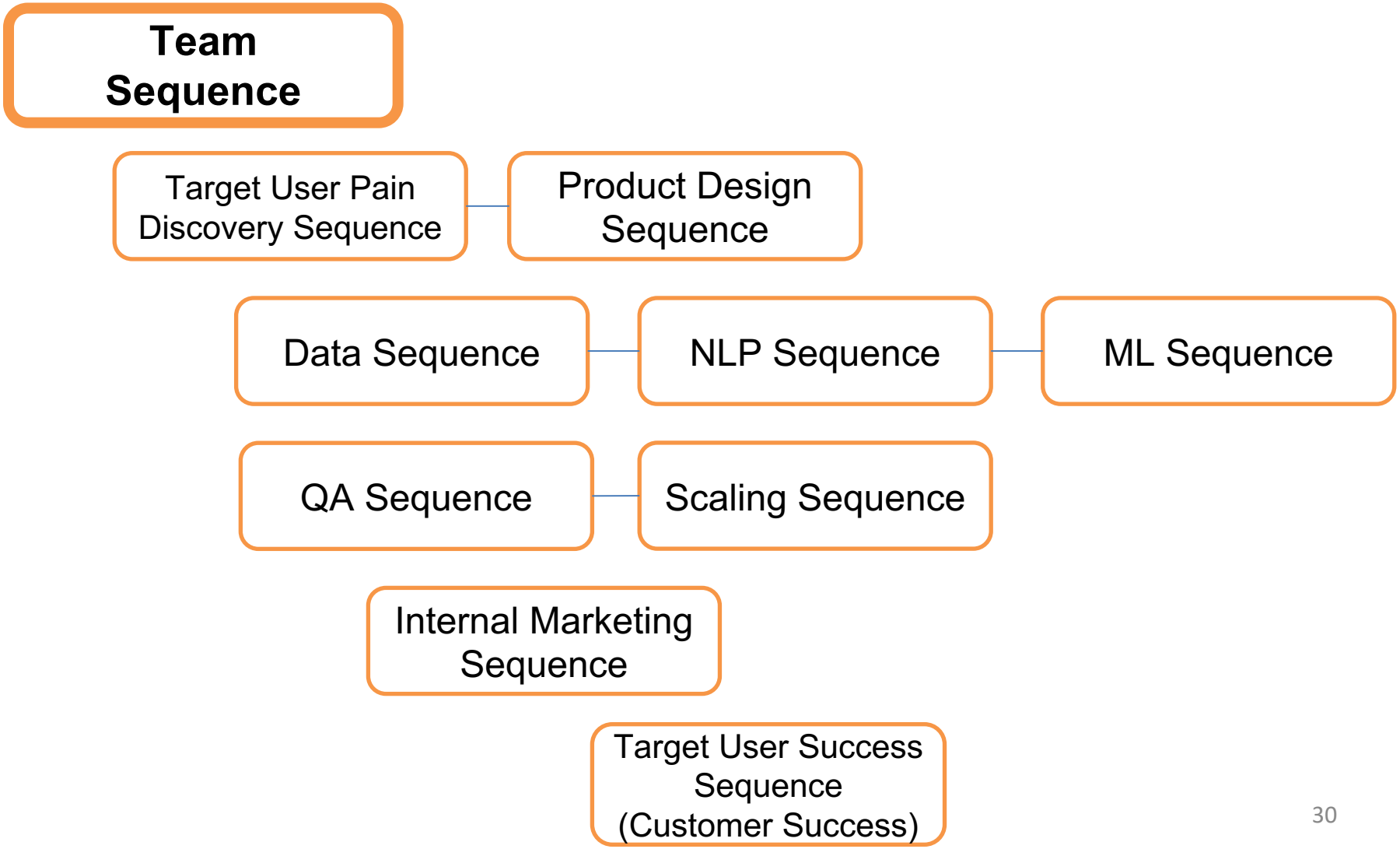
- Group the customers for next best action

AI Team Sequence for Building AI Products

Building AI Assistant Product Version 1.0



Building AI Assistant Product Version 1.0



Team Sequence

Head of AI

Team Sequence

Head of AI

Hire a Small Team of the best 8 people

1 NLP Scientist (Question Answering/Knowledge Rep focused PhD)
1 ML Scientist (ML for IE or Structured Prediction focused PhD)
1 Product Requirement Owner (Is good with talking to target users and find pain points)
1 Data/Knowledge Engineer (Need to know Spark and Graph Database or something similar)
1 Security Engineer (Knows Data and Network Security)
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Team Sequence

Head of AI

Hire a Small Team of the best 8 people

After POC deployed

+1 ML Engineer
+2 NLP Engineer
+2 Data/Security Engineer
+3 Backend Engineer
+1 QA Engineer
+2 Customer Feedback/Success
+2 Knowledge Annotator

Team Sequence

Head of AI

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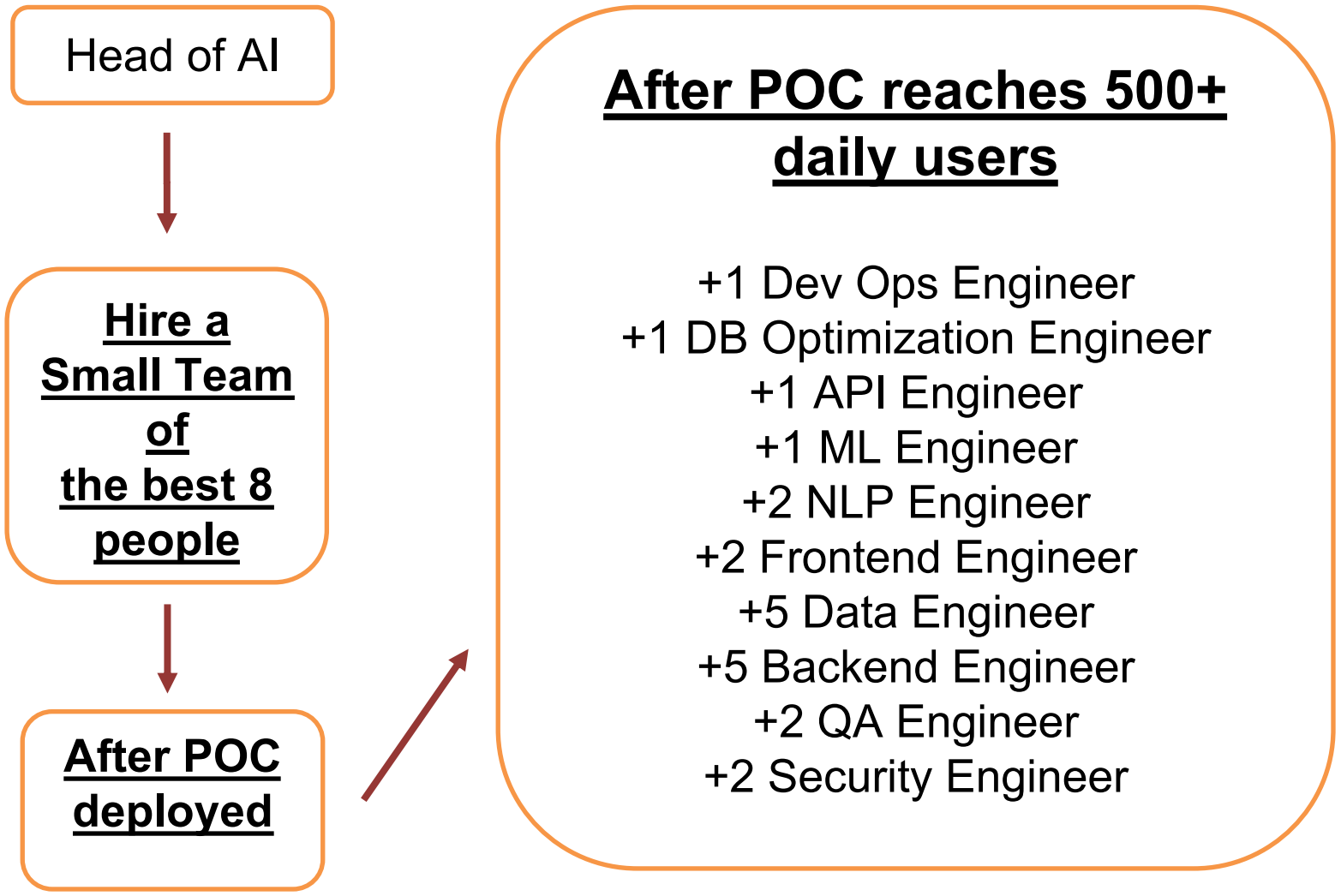

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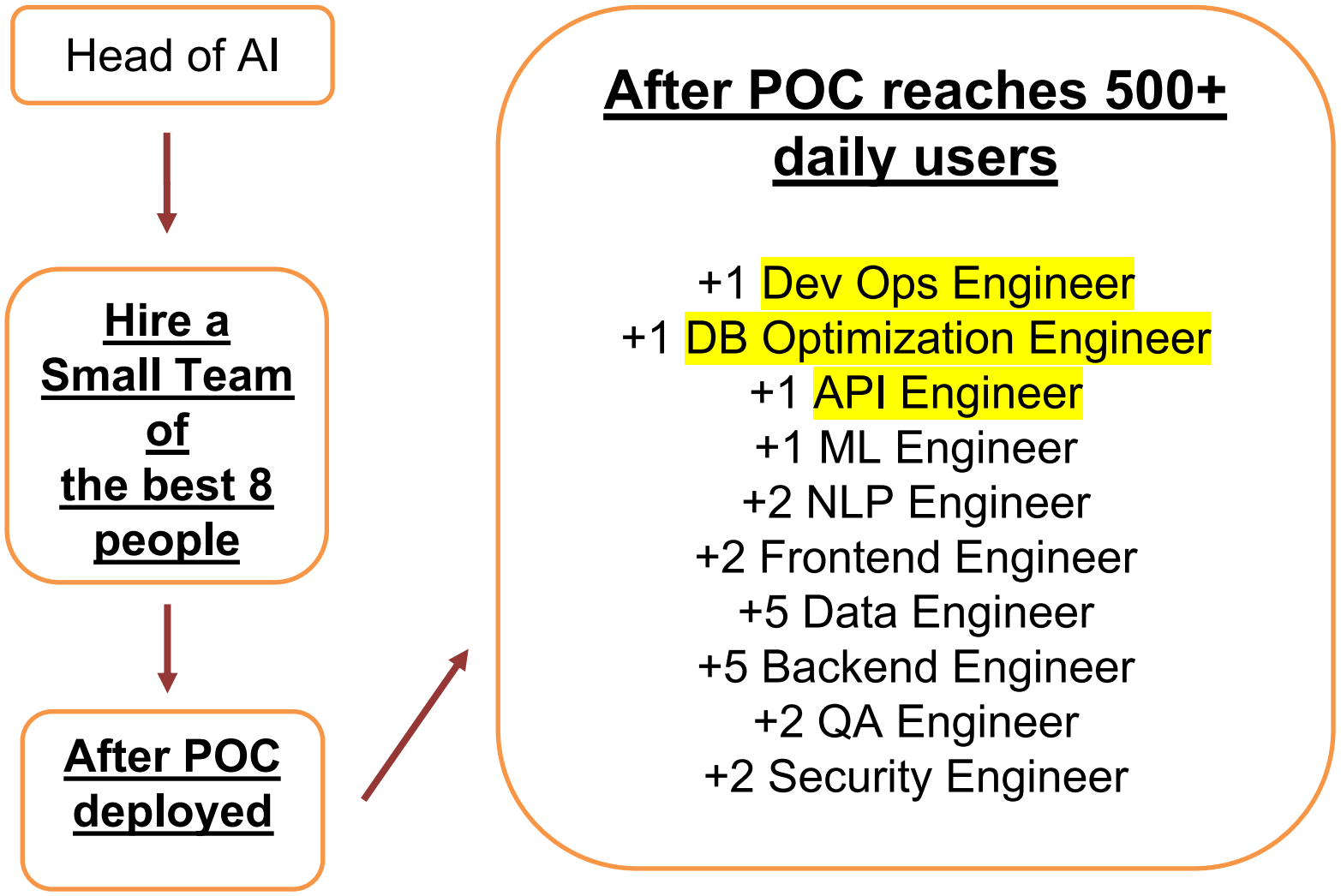

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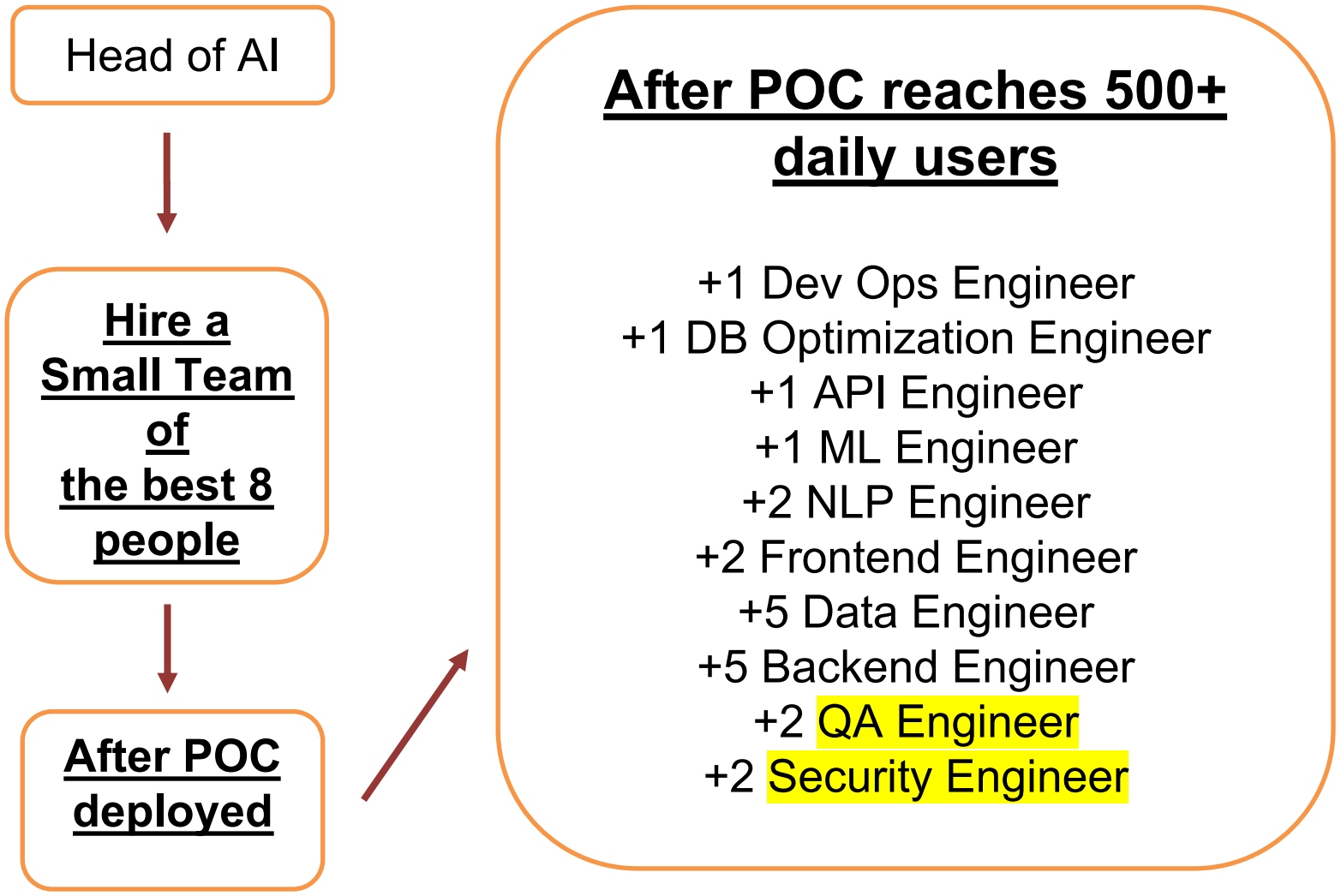

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1 QA Lead (Knows how to write integration and functional tests)

At this point, create the smallest team possible but individuals who are the best, no outsourcing, all in the same building.
Instead of 8, you can do with 5 people as well if budget is constrained

After POC deployed

+1 ML Engineer
+2 NLP Engineer
+2 Data/Security Engineer
+3 Backend Engineer
+1 QA Engineer
+2 Customer Feedback/Success
+2 Knowledge Annotator

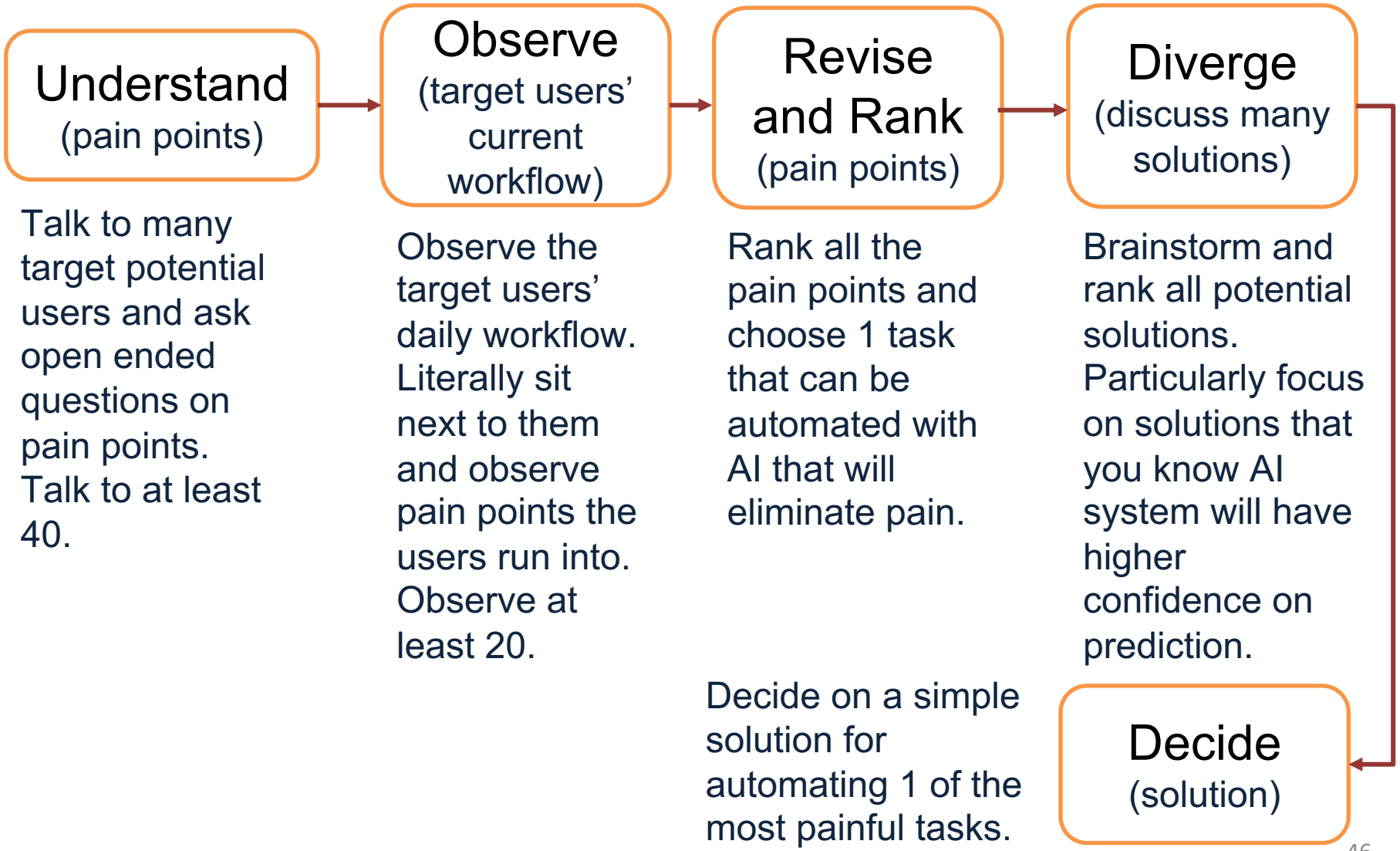
At this point, we can expand the team with junior engineers. Out of 2 Data Engineers 1 can be an outsourced engineer, Out of 3 Backend Engineers, 2 can be outsourced

After POC reaches 500+ daily users

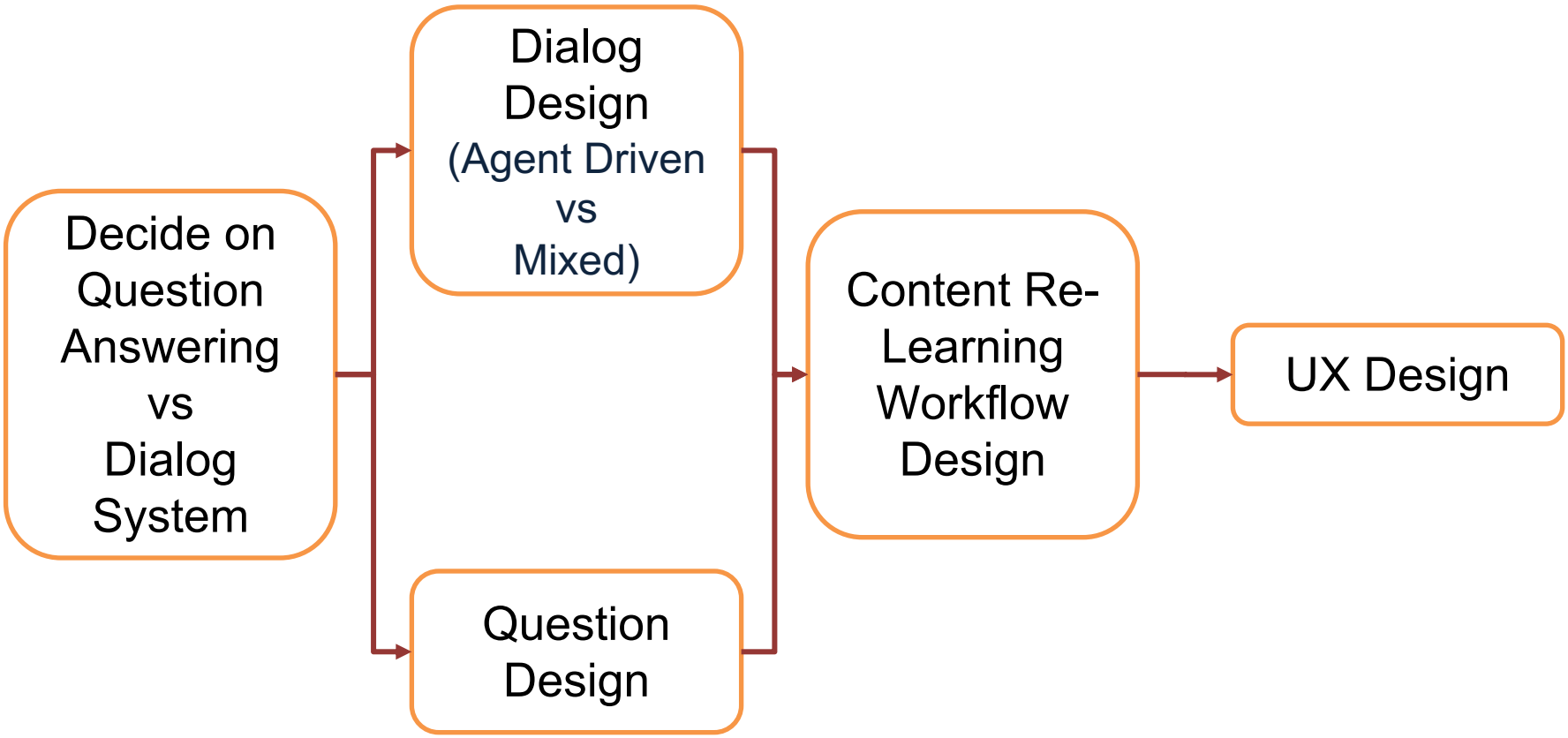
+1 Dev Ops Engineer
+1 DB Optimization Engineer
+1 API Engineer
+1 ML Engineer
+2 NLP Engineer
+2 Frontend Engineer
+5 Data Engineer
+5 Backend Engineer
+2 QA Engineer
+2 Security Engineer

At this point, we are setting up the team that can scale to 10,000+ daily users, all backend engineers can be offshore

User Pain Discovery Sequence



Product Design Sequence



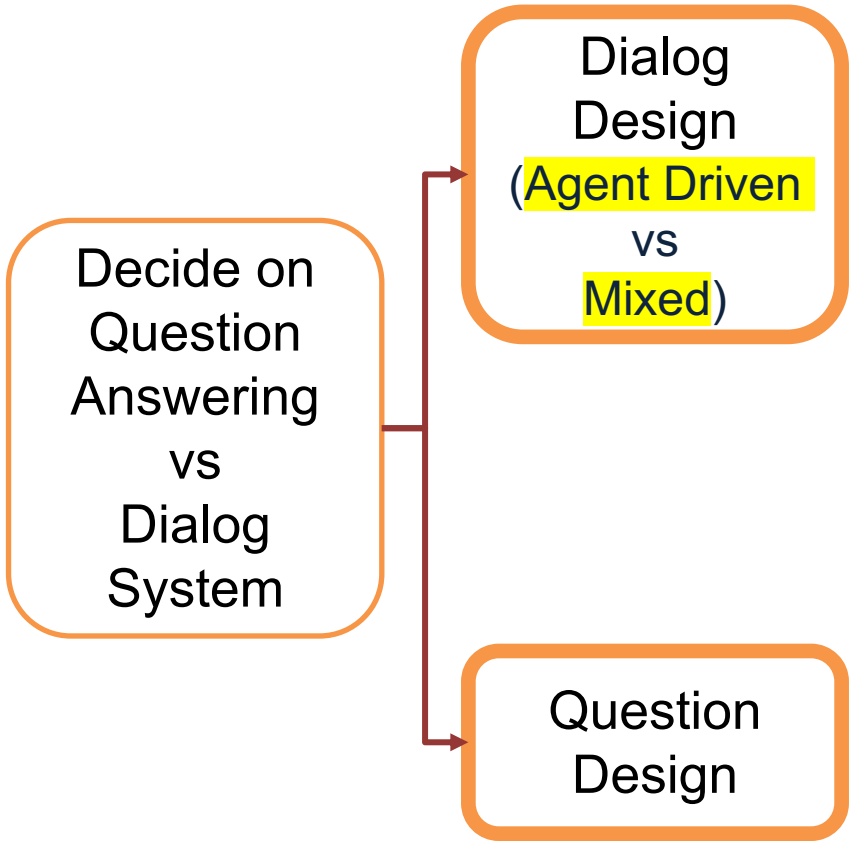
**Other design related issues on databases, algorithm design etc are in Data, NLP, ML Sequence slides*

Product Design Sequence

Decide on
Question
Answering
vs
Dialog System

You will need to make a strategic decision on whether you want to build a Question Answering Virtual Assistant or a Chatbot. I recommend you start with the Question Answering Assistant.

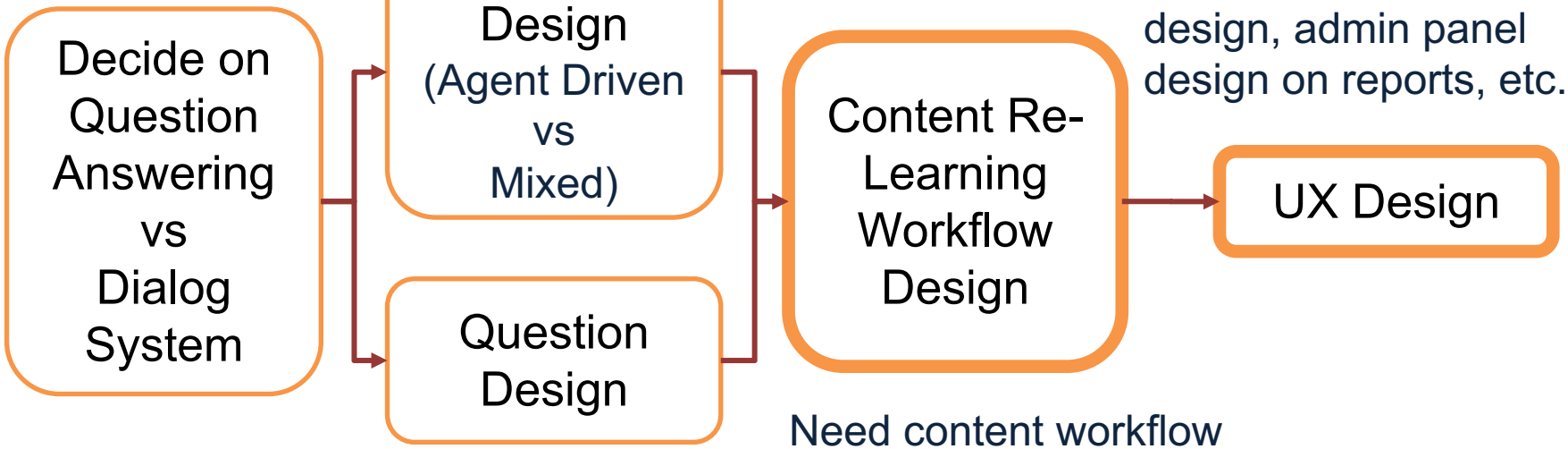
Product Design Sequence



If Dialog based Virtual Assistant, decide if it should be agent driven system (AI agent asking questions) or mixed initiative system.

If Question Answering Virtual Assistant, decide on a set of questions types for 1 Task that we are trying to automate based on Pain Discovery Sequence.

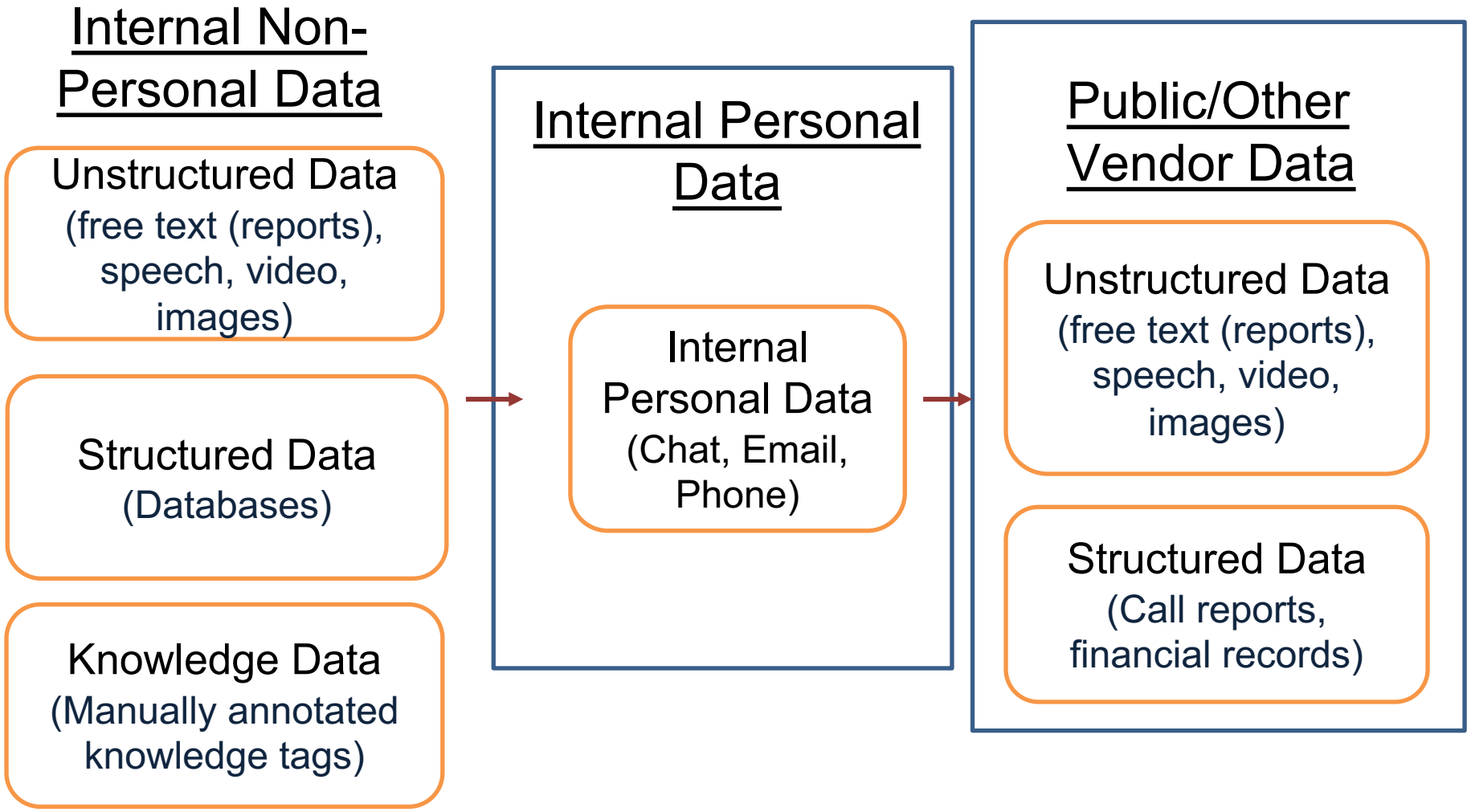
Product Design Sequence



Simple UX Design and use agile methods to get quick feedback on design. UX Design includes user experience window design, admin panel design on reports, etc.

Need content workflow on questions the system couldn't answer and how those questions' answers will be added to the system.

Data Sequence



NLP and ML Sequence