AI & ML – Why, What, How & Beyond

What is this talk about?

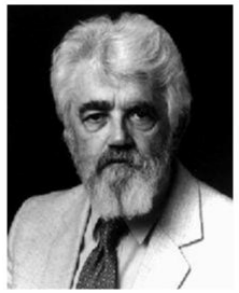
- Understanding the terminology
- ML use cases in business
- Skills to acquire to become a ML Scientist
- ML based roles available in organizations

Artificial Intelligence, Machine Learning, Data Science, Big Data, Data Analytics, Deep Learning - What are all these jargons?!

What is Artificial Intelligence?

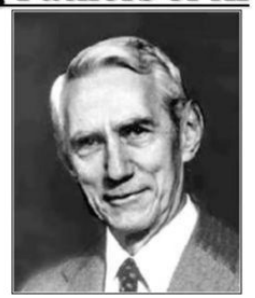
Artificial Intelligence refers to the theory and development of computer systems & machines with the ability to perform tasks normally requiring human intelligence

1956 Dartmouth Conference: The Founding Fathers of AI

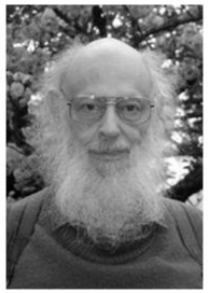


John McCarthy

Marvin Minsky



Claude Shannon



Ray Solomonoff

Alan Newell

Herbert Simon

Arthur Samuel

And three others…

Oliver Selfridge (Pandemonium theory)

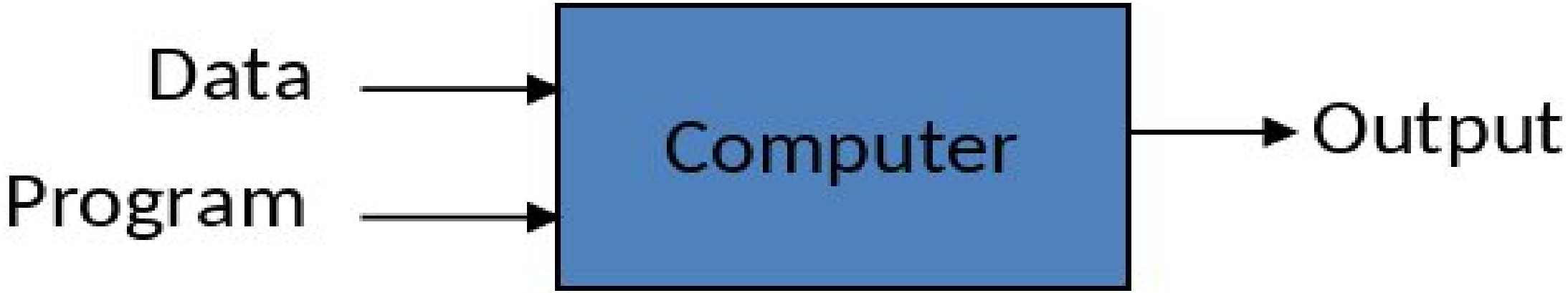
Nathaniel Rochester (IBM, designed 701)

Trenchard More (Natural Deduction)

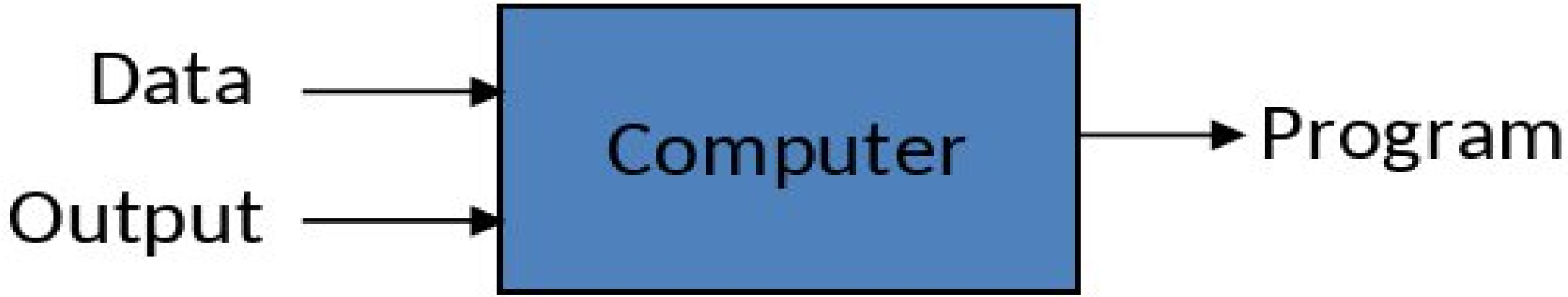
What constitutes Human Intelligence?

1. Perceive the world, detect signals and collect data
2. Make sense of the world using data (Insights, Inference, Predictions etc.)
3. Decide on the next course of action
4. Act in the Real World

Traditional Programming



Machine Learning



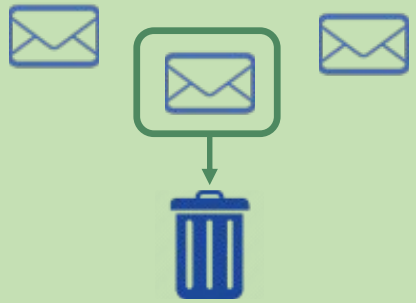
AI in relation to ML & Deep Learning

Artificial Intelligence

AI theory emerged, stirs excitement

Machine Learning

ML began to flourish



Deep Learning

Deep Learning breakthroughs driving AI boom

1950's | 1960's | 1970's | 1980's | 1990's | 2000's | 2010's | .... |

AI Conceptualized

Data Availability

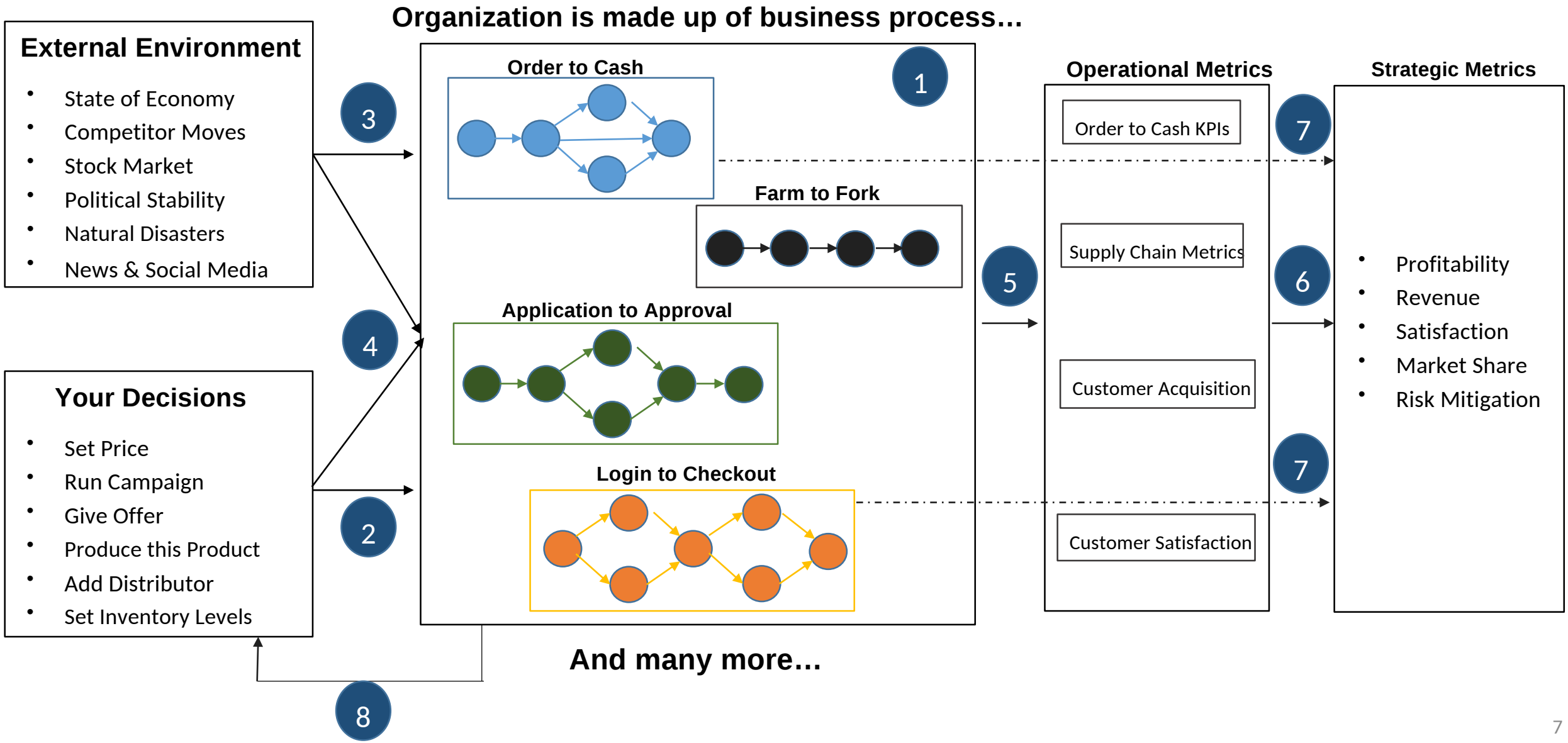
Advent of Cloud

When Would We Use Machine Learning?

- When patterns exists in our data
  - Even if we don’t know what they are
  - Or perhaps especially when we don’t know what they are
- We can not pin down the functional relationships mathematically
  - Else we would just code up the algorithm
- When we have lots of (unlabeled) data
  - Labeled training sets harder to come by
  - Data is of high-dimension or High dimension “features”
  - Want to “discover” lower-dimension representations

So, what is in it for business?

Business Decision Making is complex but worth it…



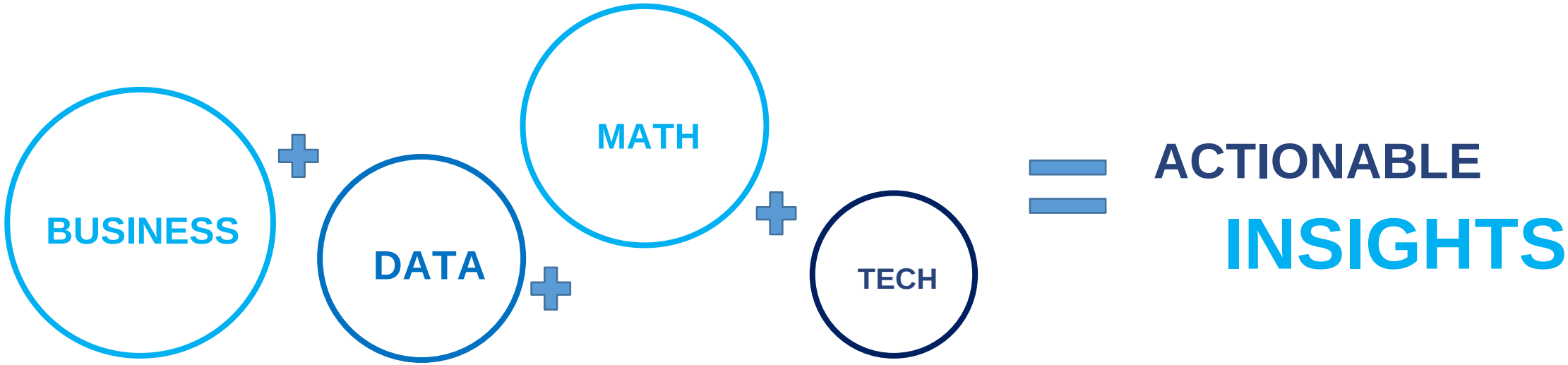
Generating value across the business.

ML is used in weird ways as well :))

- ELLI.Q : Companion for elders
- Ara : AI embedded in your tooth brush
- AI Rapping
- Machines that dream
- AI toilets

what skills do I need to acquire to become a ML practitioner?

What skills are required to deliver ‘Actionable Insights’?



There could be many techniques and it is not possible to learn everything in a short timeframe? Any tips on how to keep track of them and learn as you go along?

Data Science Techniques – There are a lot of them!

What are the useful components in the data science toolbox?

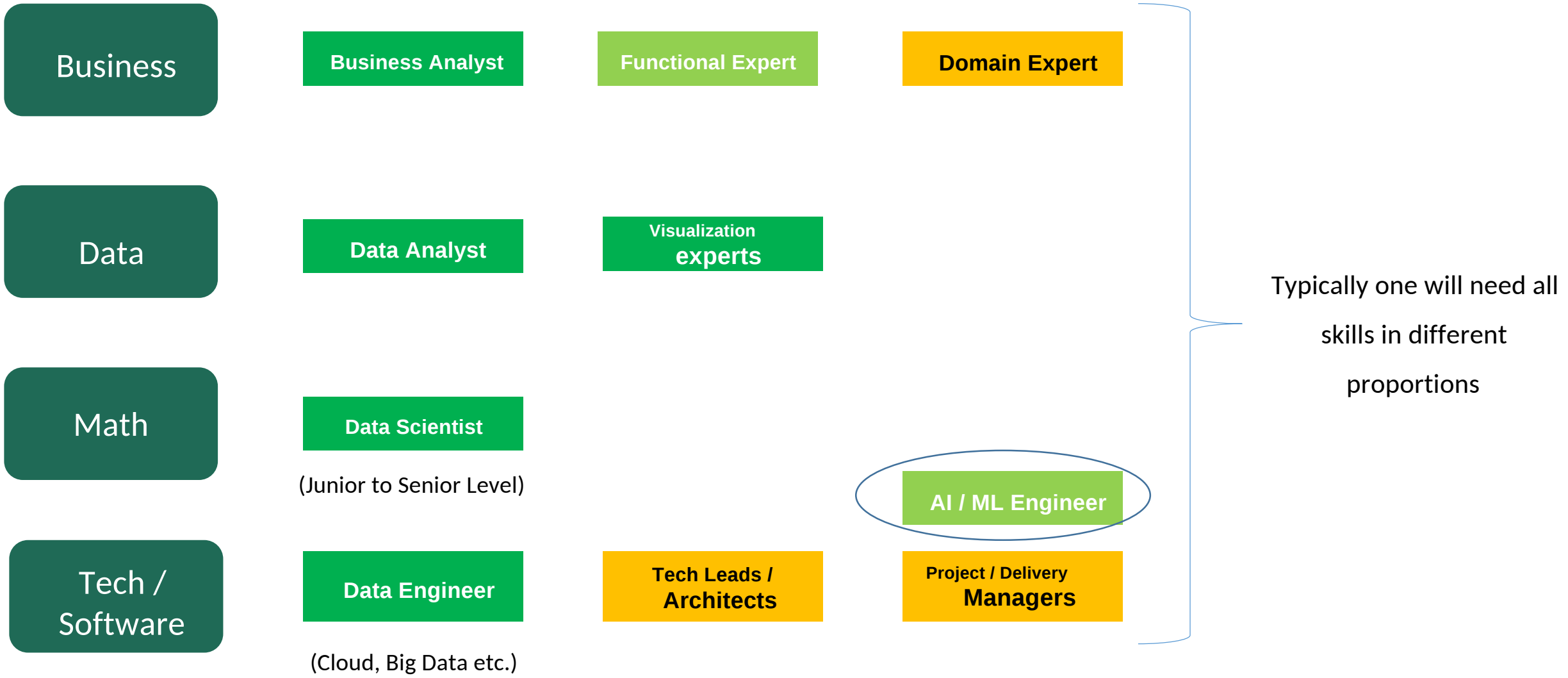
Data Science Toolbox

- Maths / Stats orientation (Not a tool but…)
- Atleast 1 programming language – Python (Jupyter notebooks), R, Scala, Julia, Go
- Atleast 1 GUI based ML platform – H2o, Azure ML, BigML, Weka, Orange, Rapid Miner
- Visualization tools - Shiny, Django, Flask, d3js, google charts
- Github
- Distributed Computing - Spark, Hadoop
- Database / SQL knowledge

Other than the analytical techniques themselves, what are the other skills that needs to be developed?

What are the typical roles in the analytics space and entry possibilities for different experience levels?

Typical Roles in Analytics



Yipee! Let’s get going on AI / ML

Q & A