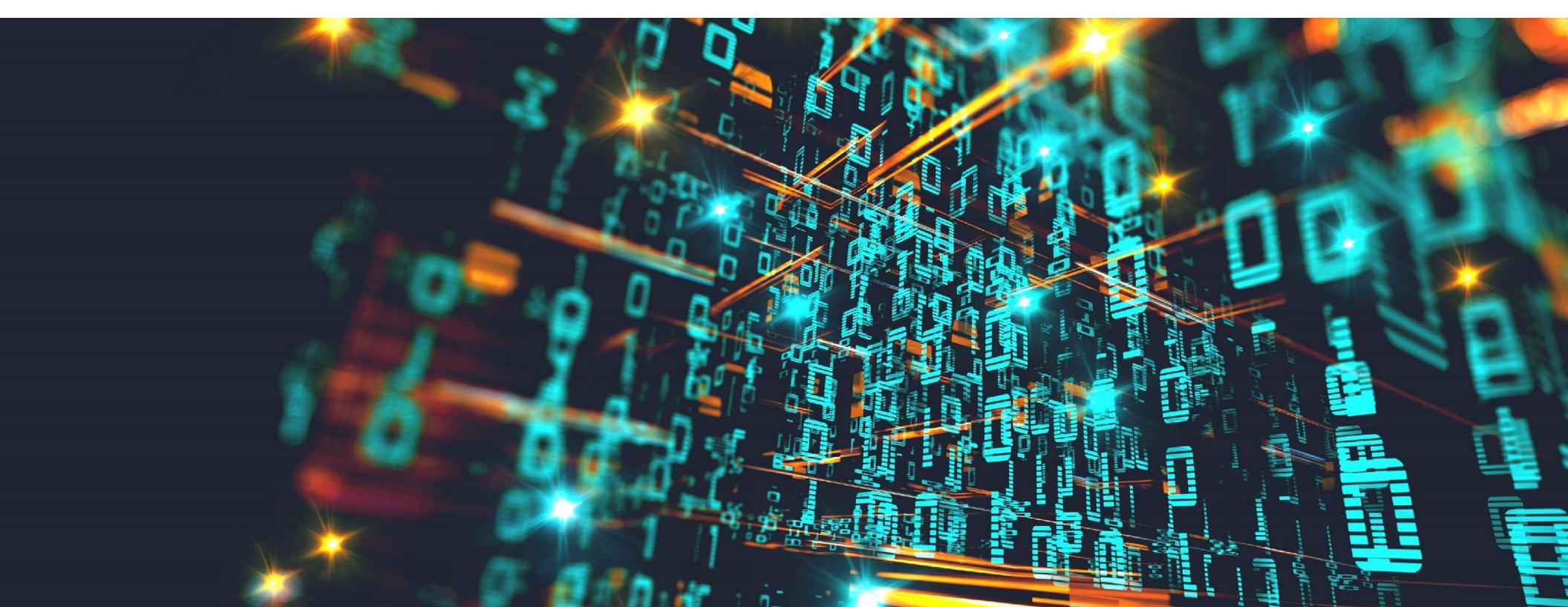DATA ANALYTICS

ROBOTIC PROCESS AUTOMATION

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DIGITAL LANDSCAPE

| Big Data | Advanced Analytics | Data Science | Business Intelligence | Robotic Process Automation | Artificial Intelligence |

DATA TYPES
INFORMATION USUALLY FORMATTED IN A PARTICULAR MANNER

Quantitative – Discrete (Integer), Continuous (Dividable)

- How many, How much, How often
- Expressed as numeric and math can be applied

Qualitative – Nominal (labels), Ordinal (Sequence)

- How or why has this happened
- Can't be expressed as a number and can't be measured

BIG DATA

DATA SETS WHOSE SIZE OR TYPE IS BEYOND THE ABILITY OF TRADITIONAL RELATIONAL DATABASES TO CAPTURE, MANAGE AND PROCESS THE DATA WITH LOW LATENCY.

High Volume Federal Sector Examples – Financial Management, People Data, Acquisition, Budget, Timekeeping data, Customer Feedback, Consumption, Performance Mgt, Workload, Procurement

High Velocity the rate at which data is received and (perhaps) acted on

High Variety Traditional data types were structured and fit neatly in a relational database. New unstructured data sources such as written text, images, audio, website logs
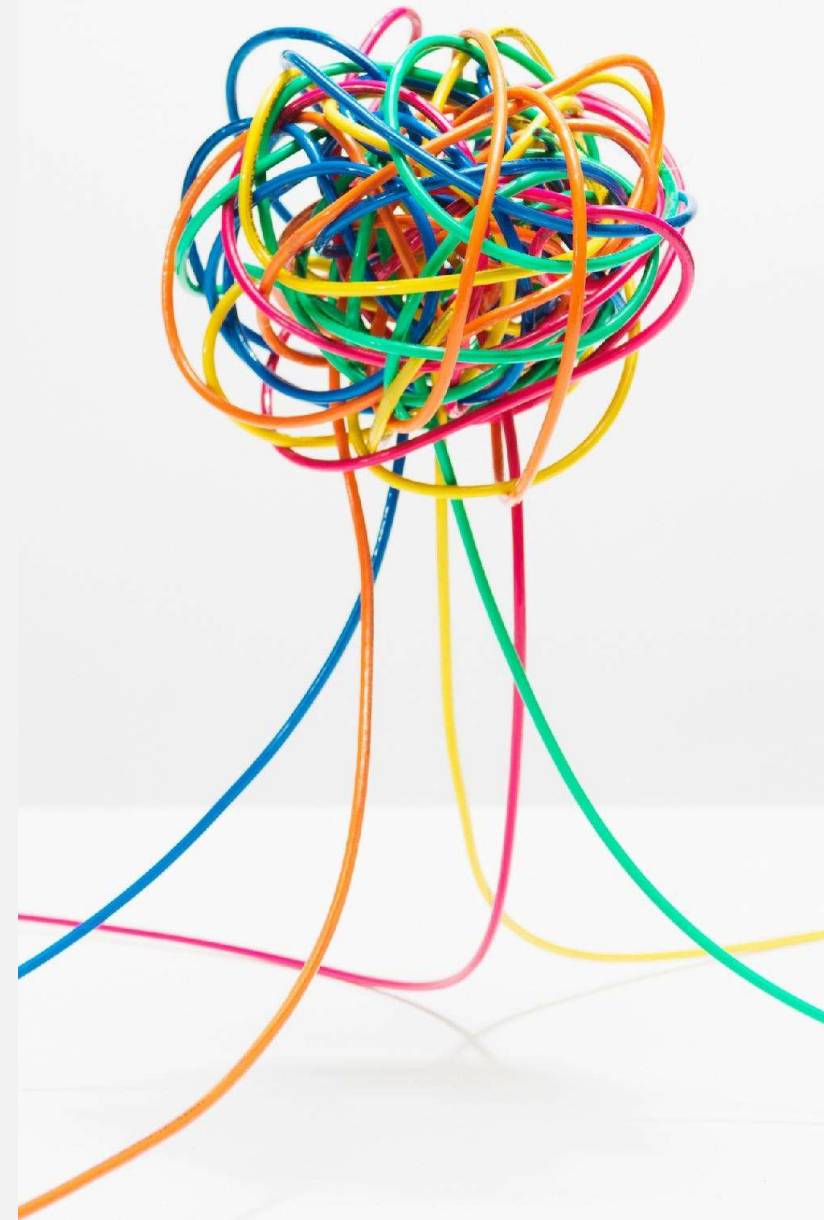
DATA ANALYTICS

The conversion of raw information into useful insights for understanding the world

A combination of science, math, and technology driven by human desire to make sense of the unknown

Artistry appealing to the senses, ability to make connections and influence change through story telling, powerful visualization

TYPES OF DATA ANALYTICS

Descriptive (Dashboards/BI reports)

- How many, when, where, and what happened

Diagnostic (Data Mining)

- Understanding cause and why something happened (correlation)

Prescriptive (AI/Big Data/ML)

- Predict outcomes, identify what actions to take (Optimization)

Predictive (Modeling/Stats)

- Identify Trends, what will happen next

DATA SCIENCE
ADVANCED ANALYTICS

Data Science is the study of data to extract meaningful insights for business. It is a multidisciplinary approach that combines principles and practices from the fields of mathematics, statistics, artificial intelligence, and computer coding (R Studio/Python) to analyze large amounts of data.

Advanced Analytics refers to technology-enabled, complex processes of examining large and varied data sets to uncover information including hidden patterns, unknown correlations, market trends, and customer preferences that can help organizations make informed business decisions.

EXAMPLE OF ANALYTICS IN PERSONAL LIFE

Volunteer as a Coach for a youth little league team

- What outcomes do you want to achieve this season?

- What data do you have about the players?

- What data could be useful if you had it?

- How could you collect that data?

- How can you organize and manage your data?

- Is your data helping you make decisions?

- What information do others need to know?

EXAMPLE OF ANALYTICS AT WORK

You are a new leader of a Payroll team

- Are you meeting customer expectations? How do you know? Does your team provide reports or stats?

- What are the metrics for the team? Are they measuring what is important, does it represent the majority of the work?

- Do you have data about your team members? Time in position, length of service, prior experience, workload balance, time allocation, current performance, training/development needs, job satisfaction

- How is work managed, are processes documented, does work get done efficiently?

- Is your data helping you make decisions and achieve results?

A CLASSIC APPROACH - LEAN6 PROCESS IMPROVEMENT

1 → 2 → 3 → 4 → 5

Define

Purpose of effort, scope, team/stakeholders, document current state process, define primary success metric

Measure

Collect data thru available sources, create time studies, determine cost of as-is process

Analyze

Assess data collected, identify root causes, evaluate scope with greatest Return for Investment

Improve/ Design

Solicit, seek out and execute ideas to address root Causes (Technology, People, Processes, Policies).

Control/ Verify

Measure new results, monitor effectiveness, evaluate for continuous improvement

BUSINESS INTELLIGENCE

Software that ingests business data, supports data preparation, data management and presents it in user-friendly views such as reports, dashboards, charts, and graphs

Common BI platforms

- Microsoft Power BI

- Qlik Sense

- IBM Cognos Analytics

- Oracle Business Intelligence EE

- SAP BusinessObjects BI Suite

ROBOTIC PROCESS AUTOMATION (RPA) BOTS

Commercial Off the Shelf (COTS) software technology that can be used to automate repetitive, rules-based computer-based tasks

Popular uses include data entry, data reconciliation, spreadsheet manipulation, systems integration, automated data reporting, analytics, and customer outreach and communications

Can be utilized beyond a workload reduction technology. It can be deployed to increase quality, reduce human error, increase compliance, strengthen controls environments, and to add new services to an organization's portfolio

Helping humans be more human at work by creating capacity, allowing a shift from low to high value work
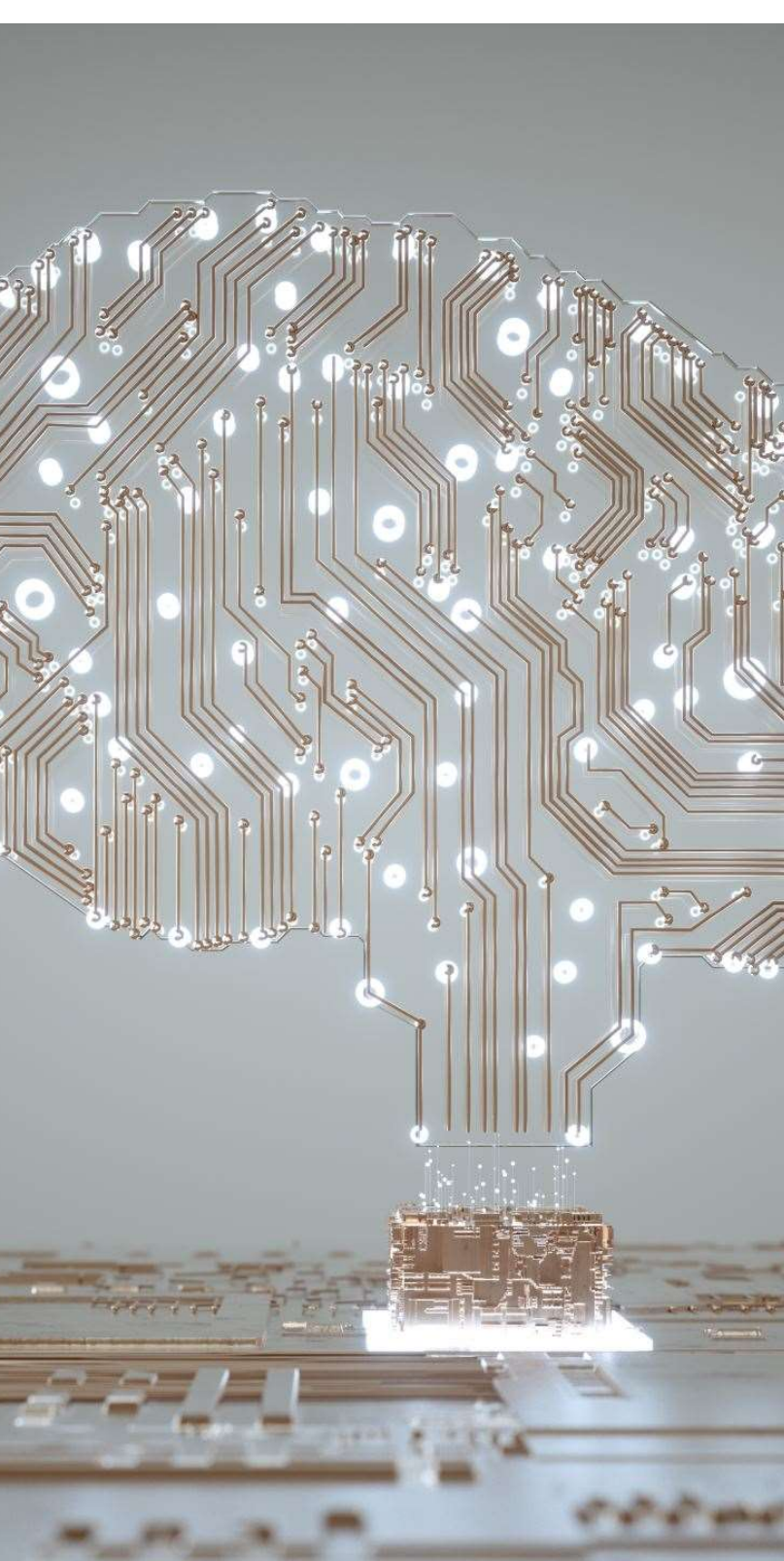
ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) mimics human intelligence by combining large amounts of structured or unstructured data to learn from patterns and perform tasks normally conducted by humans.

Natural Language Processing (NLP) – enables machines to understand and translate the human language

Machine Learning (ML) is the process of applying algorithms that teach machines how to automatically learn and improve from experience without being explicitly programmed.

AI-powered chatbots, for example, use NLP to interpret what users say and what they intend to do, and machine learning to automatically deliver more accurate responses by learning from past interactions and being trained on huge datasets.

HOW TO IMPROVE YOUR DATA ANALYTIC KNOWLEDGE, SKILLS, ABILITIES

- **Be curious, be observant, identify opportunities**

- **Self assess your current strengths with data, set goals of what you would like to improve on**

- **Seek applicable knowledge and technical training**

- **Knowledge without application erodes quickly, have a current or near-term need in mind**

- **Analytics is a craft; there are many levels and sub disciplines, find one that interests you**

- **Complimentary core skill for Accountants, Financial Analyst, and IT professionals**