Let's take the Government of Canada on an AI journey

Alexandre Synnett

SVP National Capital Region

November 2023

CGI

A little about me…

- SVP National Capital Region, CGI

- Board Member, Mila

- Former EVP and CIO, CDPQ

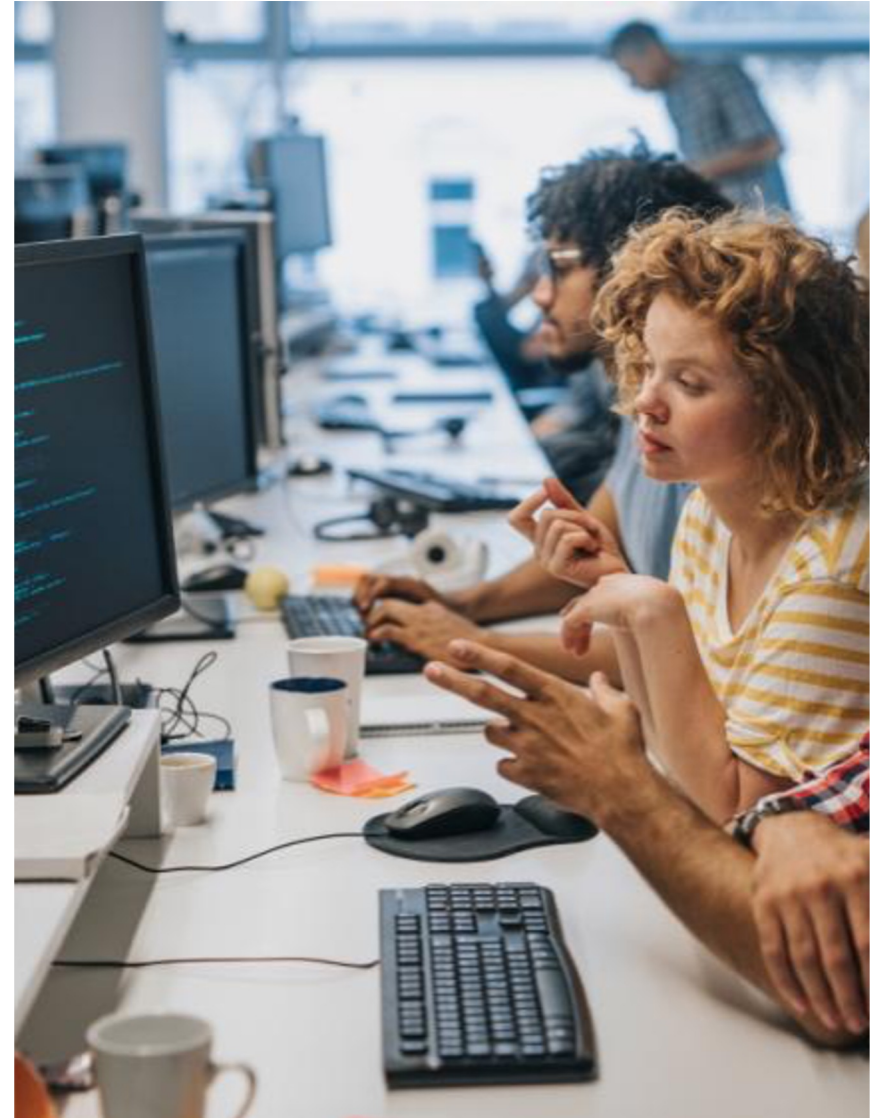- Former VP, National Bank Financial

Today's session will cover….

01

The evolution of
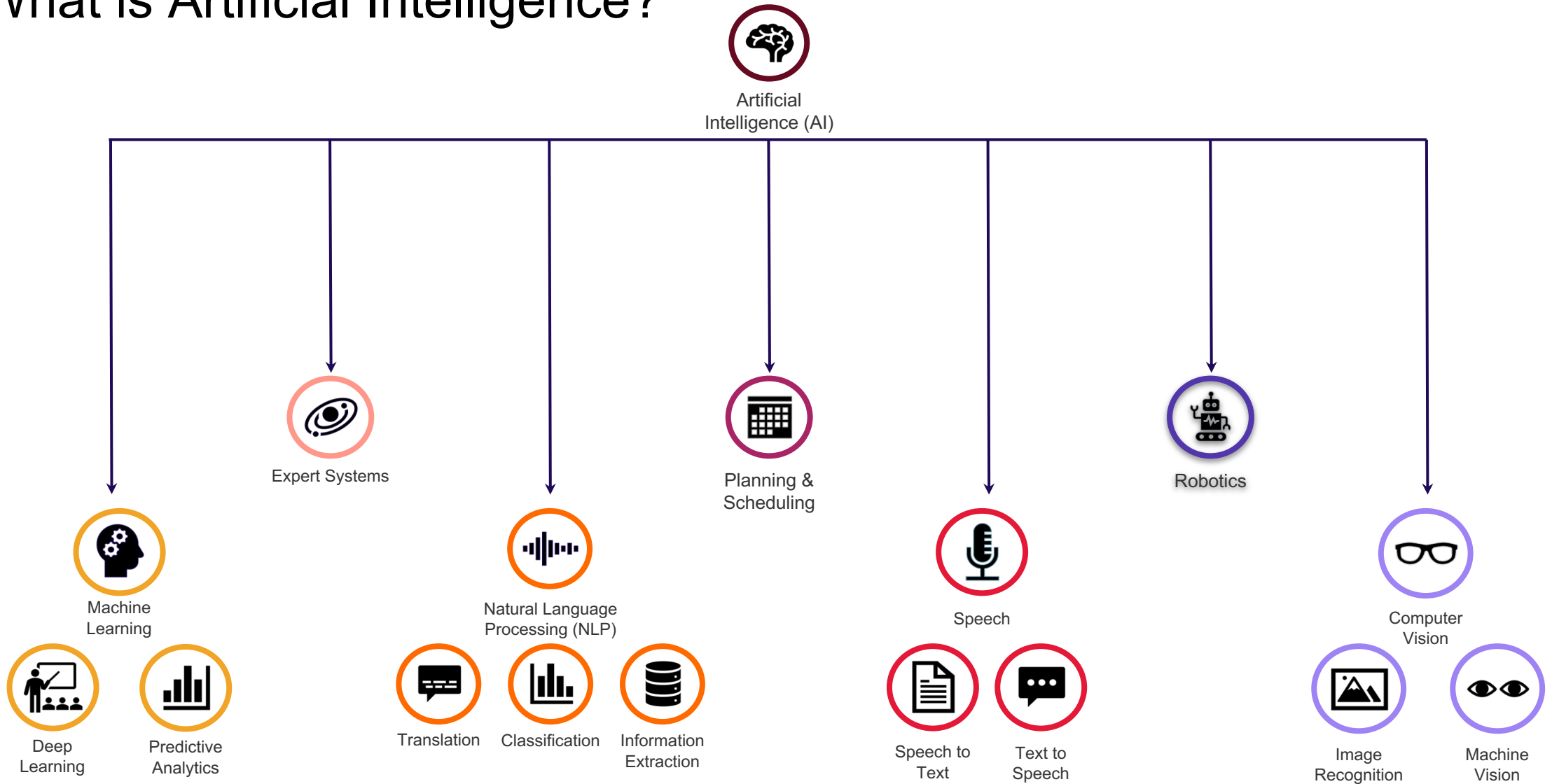AI and where
it's headed

02

The steps
needed to build
the fundamental
elements of an
AI strategy

03

How to avoid
pitfalls often
seen in the
public sector

What is Artificial Intelligence?

Artificial Intelligence (AI)

Expert Systems

Machine Learning
- Deep Learning
- Predictive Analytics

Natural Language Processing (NLP)
- Translation
- Classification
- Information Extraction

Planning & Scheduling

Speech
- Speech to Text
- Text to Speech

Robotics

Computer Vision
- Image Recognition
- Machine Vision

What is Artificial Intelligence?

From automation to creation

AI can scale human generated value

AI's "iPhone Moment" with **ChatGPT**

2nd **Golden Age**

The new upsurge

2017 Transformer architecture

The first golden age

AI winter

The second surge

The second significant decline

2014 Ex Machina

Expert systems limitations

2004 I, Robot

1991 Python Lang

AI (deep learning) takes off with cloud computing, and big data

1984 Terminator

1982 Tron

New Tech drove AI to be innovative and practical

Changing research objectives

Production expert systems

Neural Net was born (Perceptron)

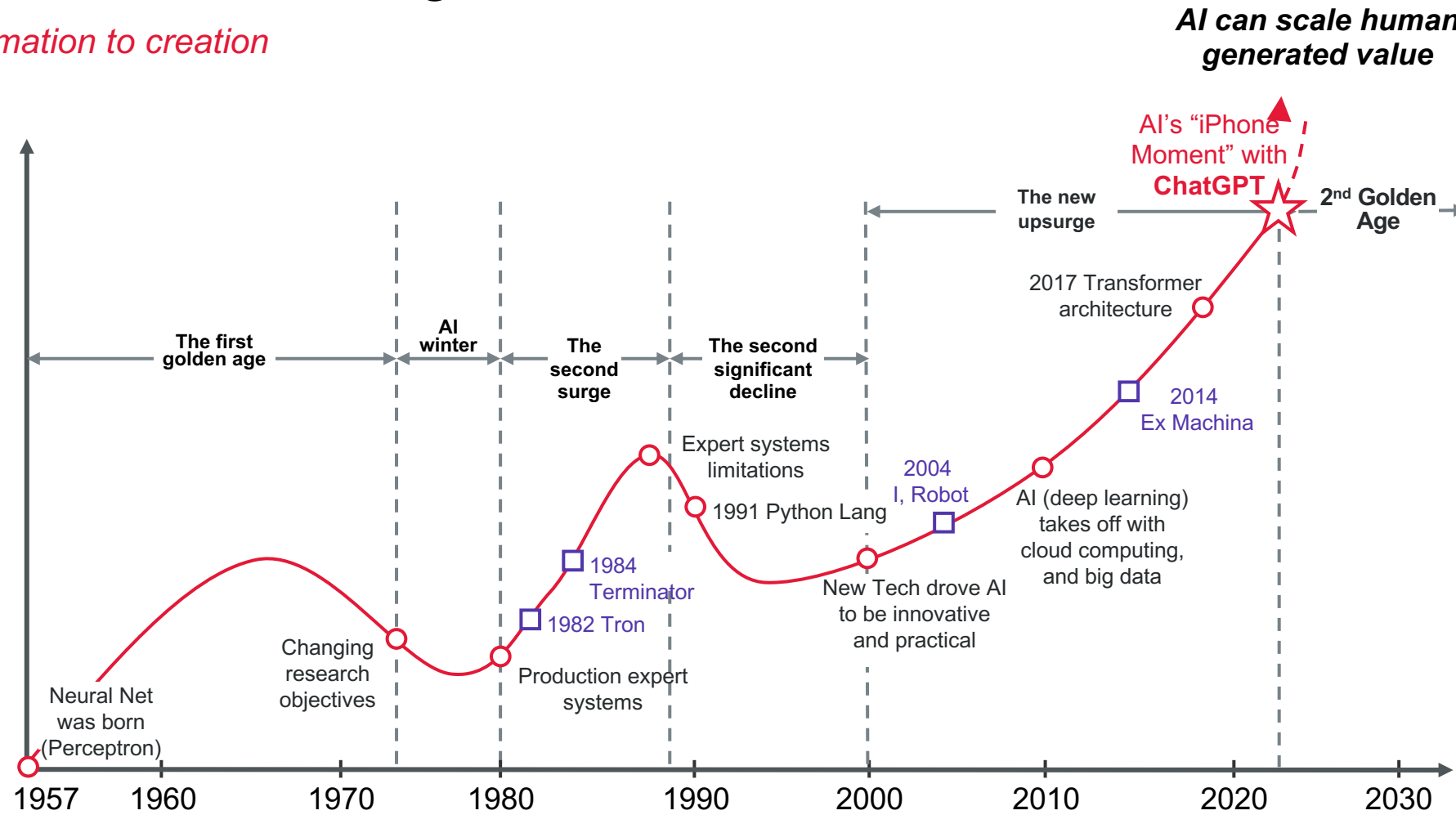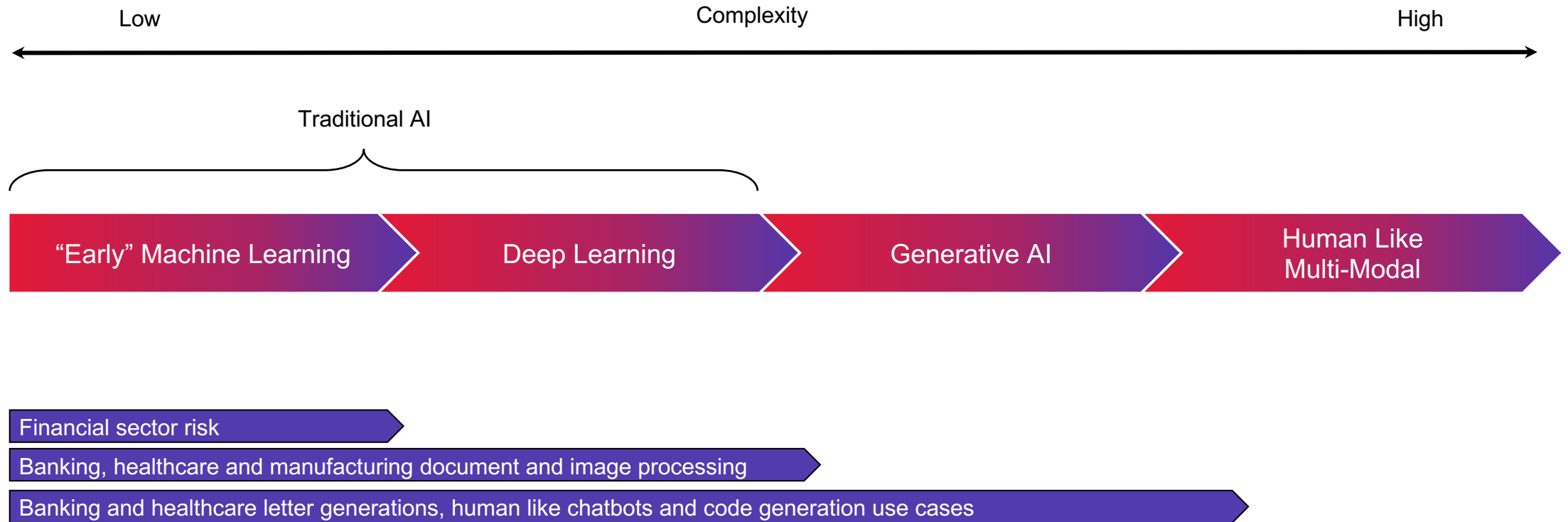1957 1960 1970 1980 1990 2000 2010 2020 2030

Figure adapted from the "Reflection of the development history of AI," published in the article "Artificial Intelligence in Product Lifecycle Management" by Wang et al. in 2021

AI technology continuum

Low   Complexity   High

⟵───⟶

Traditional AI

| "Early" Machine Learning | Deep Learning | Generative AI | Human Like Multi-Modal |

Financial sector risk

Banking, healthcare and manufacturing document and image processing

Banking and healthcare letter generations, human like chatbots and code generation use cases

Generative AI has changed the narrative

Dec 2022

Era of Foundational AI

- Narrower enterprise impacts
- Automation/RPA
- Conversations with Chief Data Officers and AI enablement teams
- Months to value
- Higher skilled labour needs (data scientists and AI researchers)
- Higher costs (data preparations, model training)
- Specialized models

Age of Generative AI

- Full enterprise impacts across all operations
- Scaling human operations and automation
- Conversations with C-Suite and leadership teams
- From days to months to value
- Lower bar for labour where communication and problem-solving skills become paramount
- Lower costs of entry with every vendor planning for or releasing GenAI-based functionality
- Multi-modality – generate all digital data types

Leveraging AI for your organization

A practical guide for strategy through execution

#1 Build a responsible strategy

Principles

Leverage the scientific merit process and create a Code of Conduct for Artificial Intelligence; principles of transparency, bias, privacy, security and moral responsibility should be defined at each stage of the engagement.

Risks

Traditional methods of risk analysis can no longer handle the ever-increasing volume of data, especially in volatile regulatory environments.
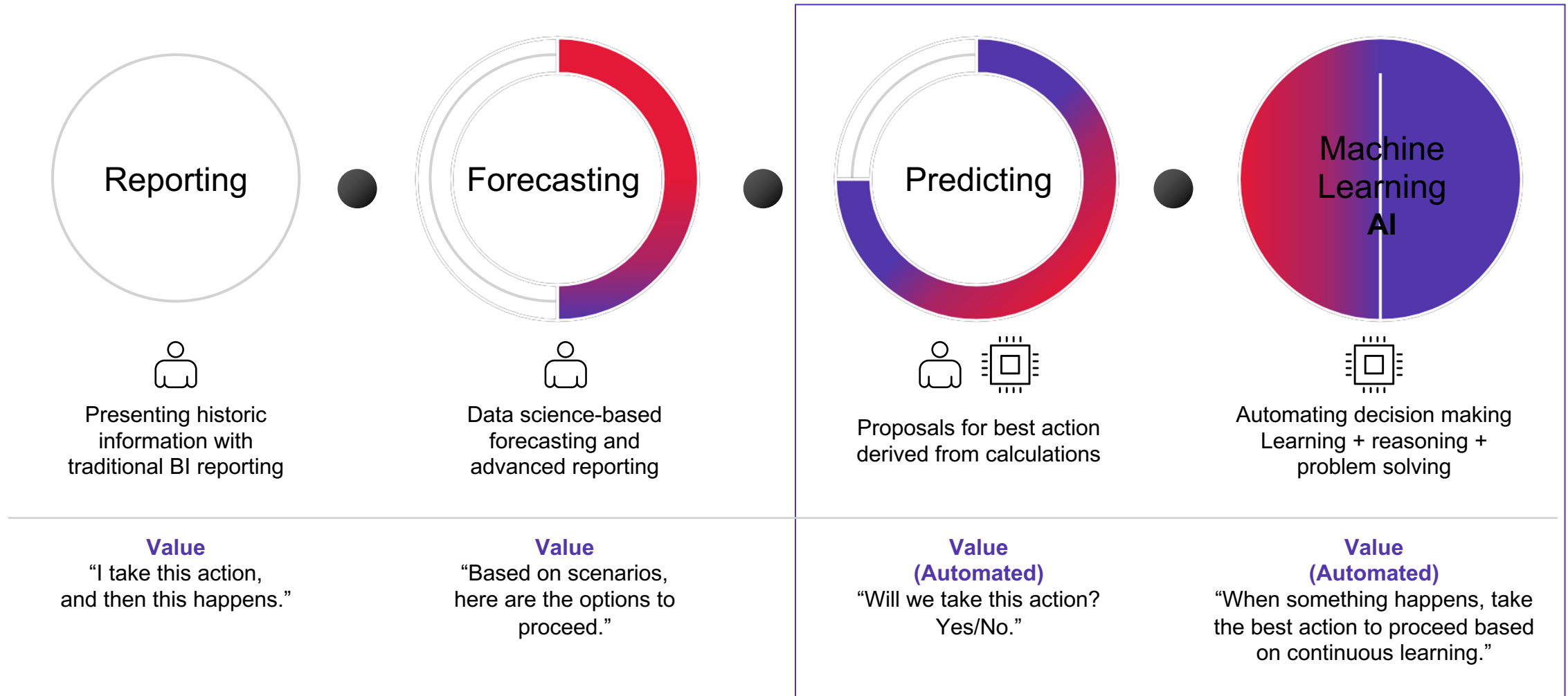A formal risk analysis needs to be conducted, tying the use of AI back to its intended purpose.

Mitigation techniques

Tools (methodological, technical, strategic) that ensure principles of ethical AI are upheld by mitigating risks identified

CGI's ethical AI framework is aligned with the GC's requirements for the responsible use of AI, and international best practices

#2 Adopt advanced business analytics focused on outcomes

Reporting

Presenting historic
information with
traditional BI reporting

Value
"I take this action,
and then this happens."

Forecasting

Data science-based
forecasting and
advanced reporting

Value
"Based on scenarios,
here are the options to
proceed."

Predicting

Proposals for best action
derived from calculations

**Value
(Automated)**
"Will we take this action?
Yes/No."

Machine Learning AI

Automating decision making
Learning + reasoning +
problem solving

**Value
(Automated)**
"When something happens, take
the best action to proceed based
on continuous learning."

#3 Take the leap and mitigate your risk

It is no longer whether organizations should leverage AI…
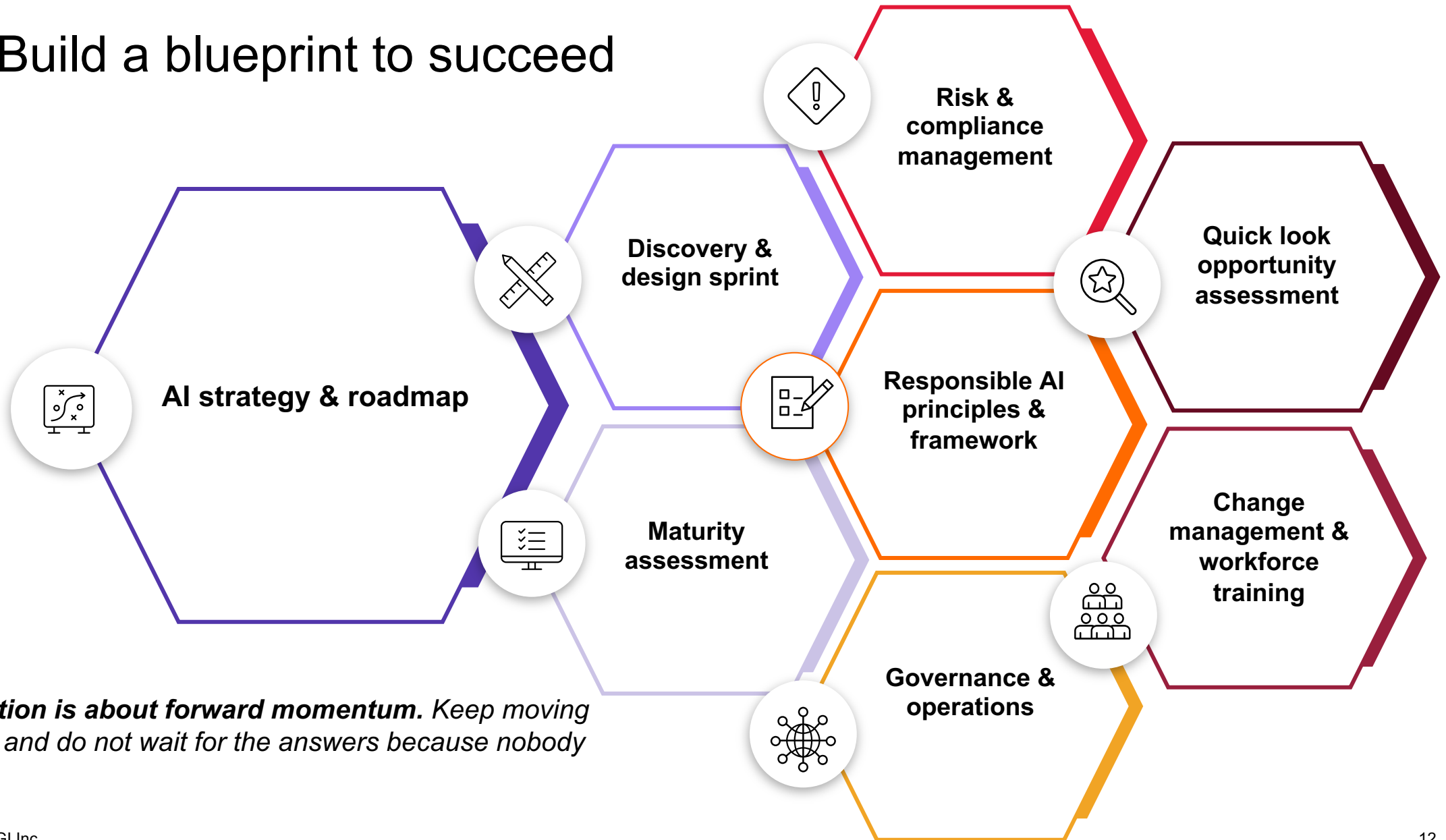
AI value creation potential	Growing AI investment	Accelerating implementation
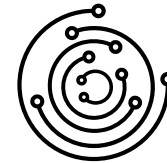
#4 Build a blueprint to succeed

Risk & compliance management

Discovery & design sprint

Quick look opportunity assessment

AI strategy & roadmap

Responsible AI principles & framework

Maturity assessment

Change management & workforce training

Governance & operations

AI adoption is about forward momentum. Keep moving forward, and do not wait for the answers because nobody does.

#5 Cover your bases
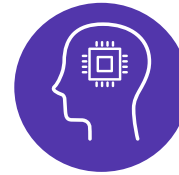
A GoC enterprise approach should consider these four pillars

Operational excellence

KPIs
- # of AI workers (models/bots)
- % of automation
- $ Savings / use case

Training & teaming/ talent capacity & capability

KPIs
- Number of members trained
- % of LOBs is leveraging AI workers

Foundational capabilities

KPIs
- % Data quality metrics
- # Closed loop analytics
- # Change management metrics
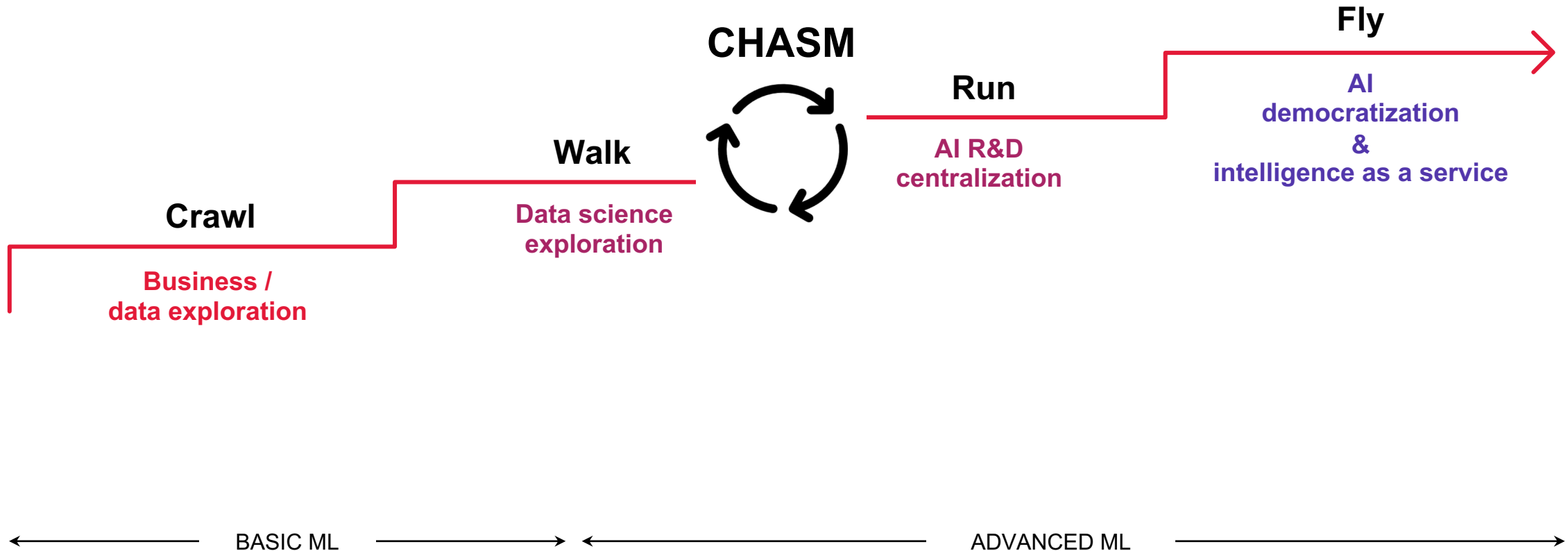- % Foundational model based usage / use cases

Solution/use case development

KPIs
- # of LOBs leveraging AI and # use cases
- Innovation metrics
- $ Savings / use case

#6 Walk before you run

CHASM

Fly

Run

Walk

Crawl

**Business /
data exploration**

**Data science
exploration**

**AI R&D
centralization**

**AI
democratization
&
intelligence as a service**

← BASIC ML → ← ADVANCED ML →

#7 Ensure your AI program is set up for success

Before investing, ensure the business case supports the plan. Is your data capable? Have you modelled these capabilities? Can you deploy?
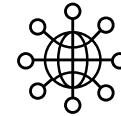
Leadership commitment
Shift in people mindset to reimagine a business problem solution with a data lens

Data

AI/ML talent

Flexible AI platform

Recap and key takeaways

01
Build a responsible strategy

02
Adopt advanced business analytics focused on outcomes

03
Take the leap and mitigate your risk

04
Build a blueprint to succeed

05
Cover your bases

06
Walk before you run

07
Ensure your AI program is set up for success

Our commitment to you

We approach every engagement with one objective in mind — to help clients succeed.

Final thoughts

AI adoption is about forward momentum, keep moving forward and do not wait to have all the answers because nobody does.

Thank you and questions

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

cgi.com

CGI