

AI for Business

Optimising AI Tool Use in Actuarial Practice:
Managing Risks and Ensuring Quality

Jeremy (Jez) Bassinder
Generative AI and watsonx leader

May 2024



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Volatility

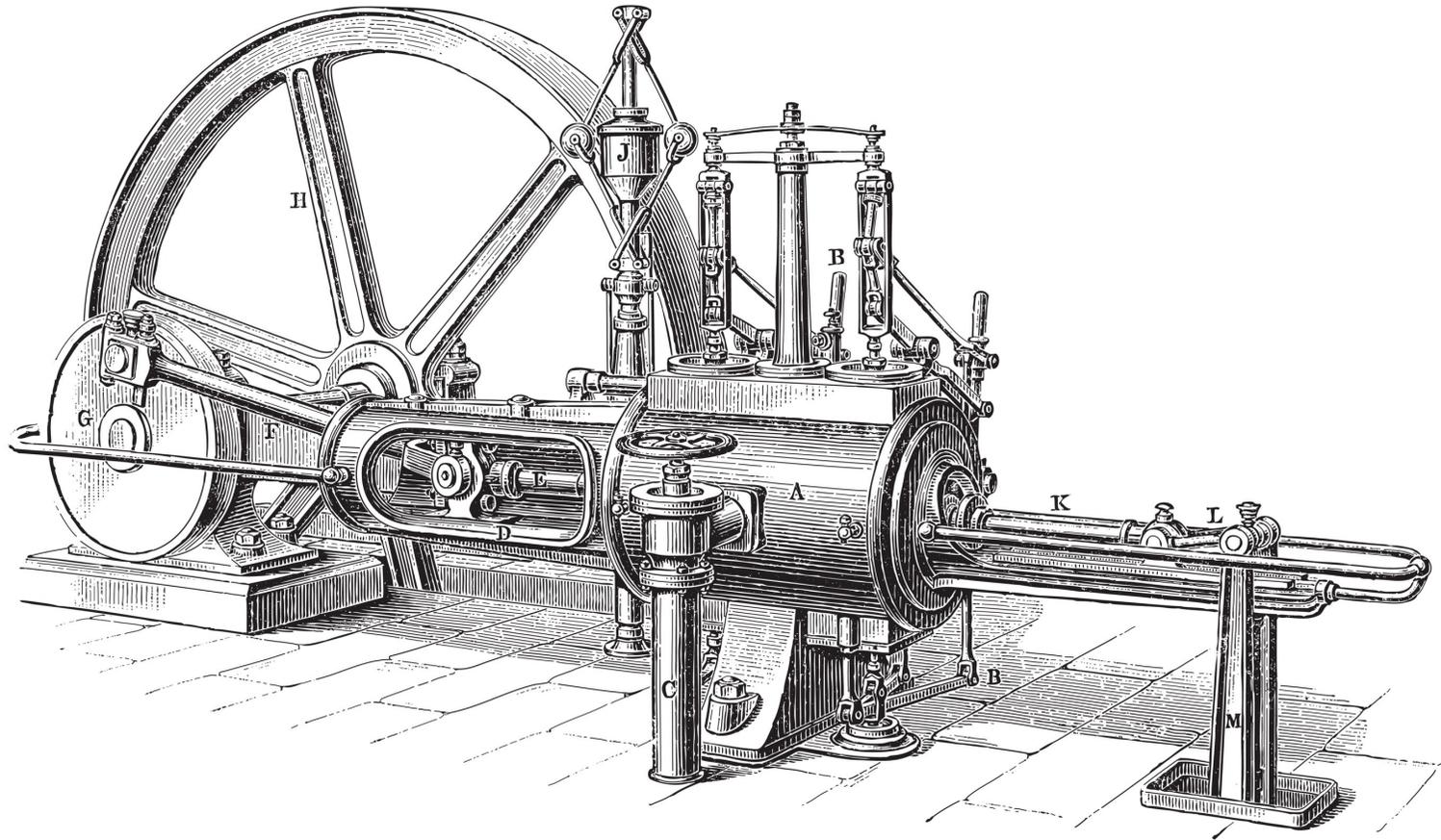
Uncertainty

Complexity

Ambiguity

Technology





Responsibility and disruption *must* coexist





What is this?



BECK'S AUTONOMOUS

MEET THE BEER

THAT MADE ITSELF.

SOLD OUT



FROM RECIPE TO ADS,
A BEER MADE WITH A.I.



What is this?



It's the
fastest
growing
consumer
product of all
time.



100M
users in
2 months

This all started with Chat GPT right? Wrong!

Turing test	Knowledge Systems	Machine Learning Boom	Deep Learning Revolution	Transformative AI	"Generative" Era
50s	Late 70s / 80s	Late 80s / 90s	2010s	Late 2010s	Today

How this manifests today in industry

Automated Customer Service:	Risk automation:	Predictive Analytics:	Image Recognition:	Dynamic risk assessment:	Generation of personalised Risk profiles:
Chatbots	Rule-based Risk systems.	Forecasting and predictive modelling	Understanding documents.	Continuously monitoring risk profiles in real time.	AI suggesting new product designs or flavours based on trends and feedback.

may to twenty the all They've
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going taught today in smile The
known you've a Hearts Pepper
style It act and So out
Club introduce ago to these Sgt.
I years band to Pepper's guaranteed
Sgt. Band play you for Lonely
But they're years

It was

In and out

May I

For All

Years ago

The band

A smile

To you

They've been

To play

Twenty years ago today, it seems,
Sgt. Pepper taught a smile,
A band of lonely hearts, their style,
Guaranteed to play.

In and out, the years raise,
But the act you've always known,
So may I introduce to you,
Sgt. Pepper's Club.

It was 20 years ago today
Sgt. Pepper taught the band to play
They've been going in and out of style
But they're guaranteed to raise a smile

So may I introduce to you
The act you've known for all these years
Sgt. Pepper's Lonely Hearts Club



A Magical Toy Parrot



 **Adobe Firefly** (Beta)
Image Not for Commercial Use



What foundation models allow you to do

	Summarisation A	Conversational Knowledge B	Content Creation C	Code Co-Creation and Translati D
Prompt	Summarise a market research report on organic foods trends.	What are the benefits of eco-friendly packaging?	Draft a product description for a new line of organic skincare.	Generate code for inventory optimisation based on sales data.
Example Output	Organic foods have surged in popularity due to health and environmental concerns, driving a market value increase of 15% in the past year.	Eco-friendly packaging reduces environmental impact, enhances brand image, and meets growing consumer demand for sustainable products.	“Introducing ‘NatureGlow’: our organic skincare range that revitalizes your skin while preserving the planet.”	<pre>import pandas as pd def optimize_inventory(sales_data): """ Calculate the average products sold over a period and suggest an inventory level. Parameters: - sales_data (pd.DataFrame): DataFrame with sales data. Expects 'product_id' and 'quantity_sold' columns. Returns: - pd.DataFrame: DataFrame with 'product_id' and 'suggested_inventory' columns. """</pre>



For real business use cases its about the combination...

Summarisation ● A

Conversational Knowledge ● B

Content creation ● C

Code Co-Creation ● D

 **Commerce**

- Experiential Personalized Content ● A ● B ● C
- Dynamic Product Catalogue ● A ● B ● C
- Smart Search & Product Classification ● A ● B ● C
- Pricing and Fulfillment Optimization ● A ● B ● D

 **Merchandising**

- Planagram Development ● A ● B ● C
- Dynamic Assortment Planograms ● A ● B ● C
- Visual Merchandising ● C
- Store Layouts ● C

 **Finance & Legal**

- Margin & Invoice Analysis ● A ● B ● C
- Regulatory & Sustainability Reporting ● A ● B
- Property/Legal Contract Review ● A ● B ● C
- Strategic Planning ● A ● B

 **Marketing**

- Marketing Copy & Ad Creation ● A ● B ● C
- Contextual Personalized Content ● A ● B ● C
- Persona Development ● A ● B ● C
- Live Stream Summarization ● A ● B ● C

 **Supply Chain & Logistics**

- Disruption Advice ● A ● B
- Issue Resolution ● A ● B ● C
- Inventory Management & Planning ● A ● B ● D
- Demand Forecasting ● A ● B ● D

 **Talent**

- Talent Acquisition ● A ● B ● C
- Performance Management ● A ● B ● C
- Employee Management ● A ● B ● C
- Associate Knowledge Support ● A ● B ● C

 **Customer Care**

- Enhanced Customer Service ● A ● B ● C
- Agent Knowledge Management ● A ● B ● C
- Sentiment analysis ● A ● B
- Call center transcripts ● A ● B ● D

 **New Product Development**

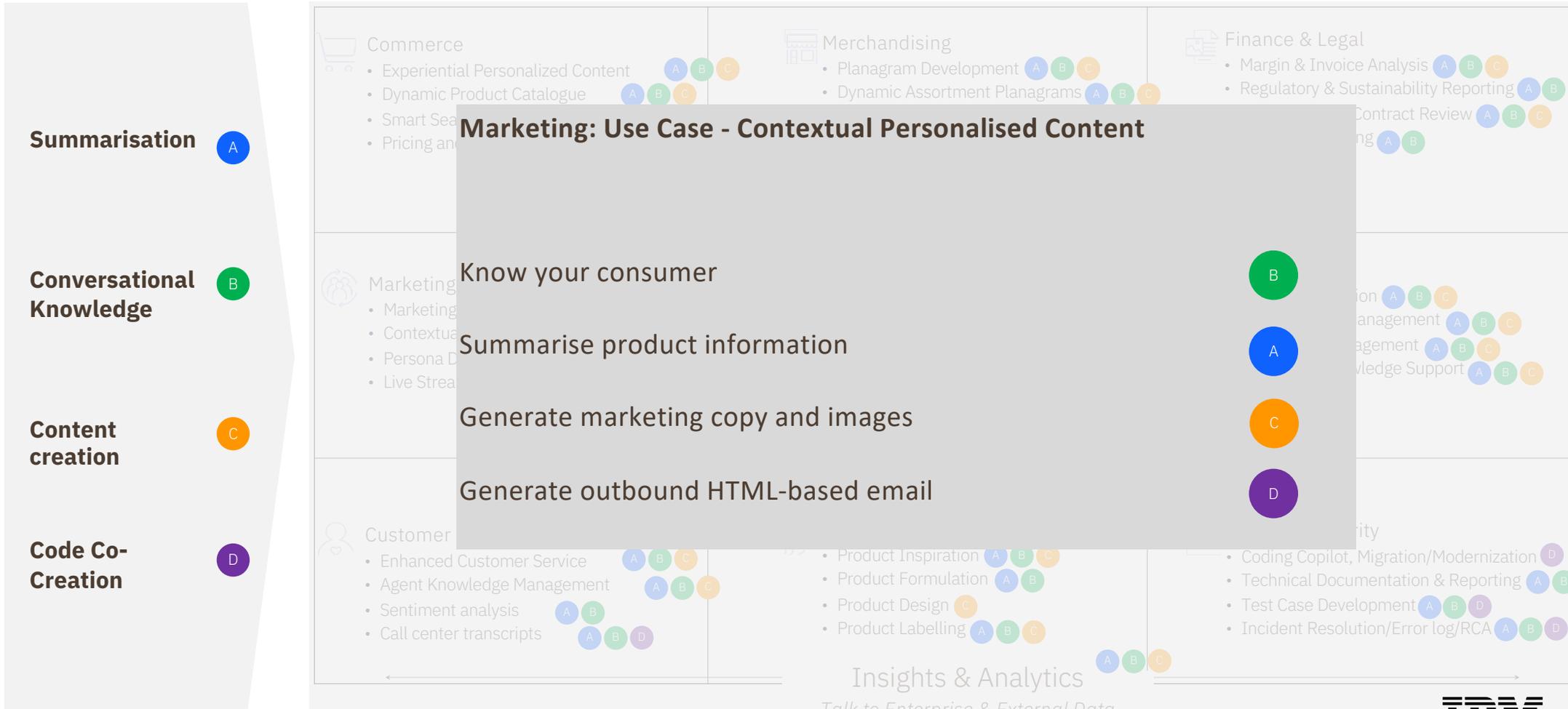
- Product Inspiration ● A ● B ● C
- Product Formulation ● A ● B
- Product Design ● C
- Product Labelling ● A ● B ● C

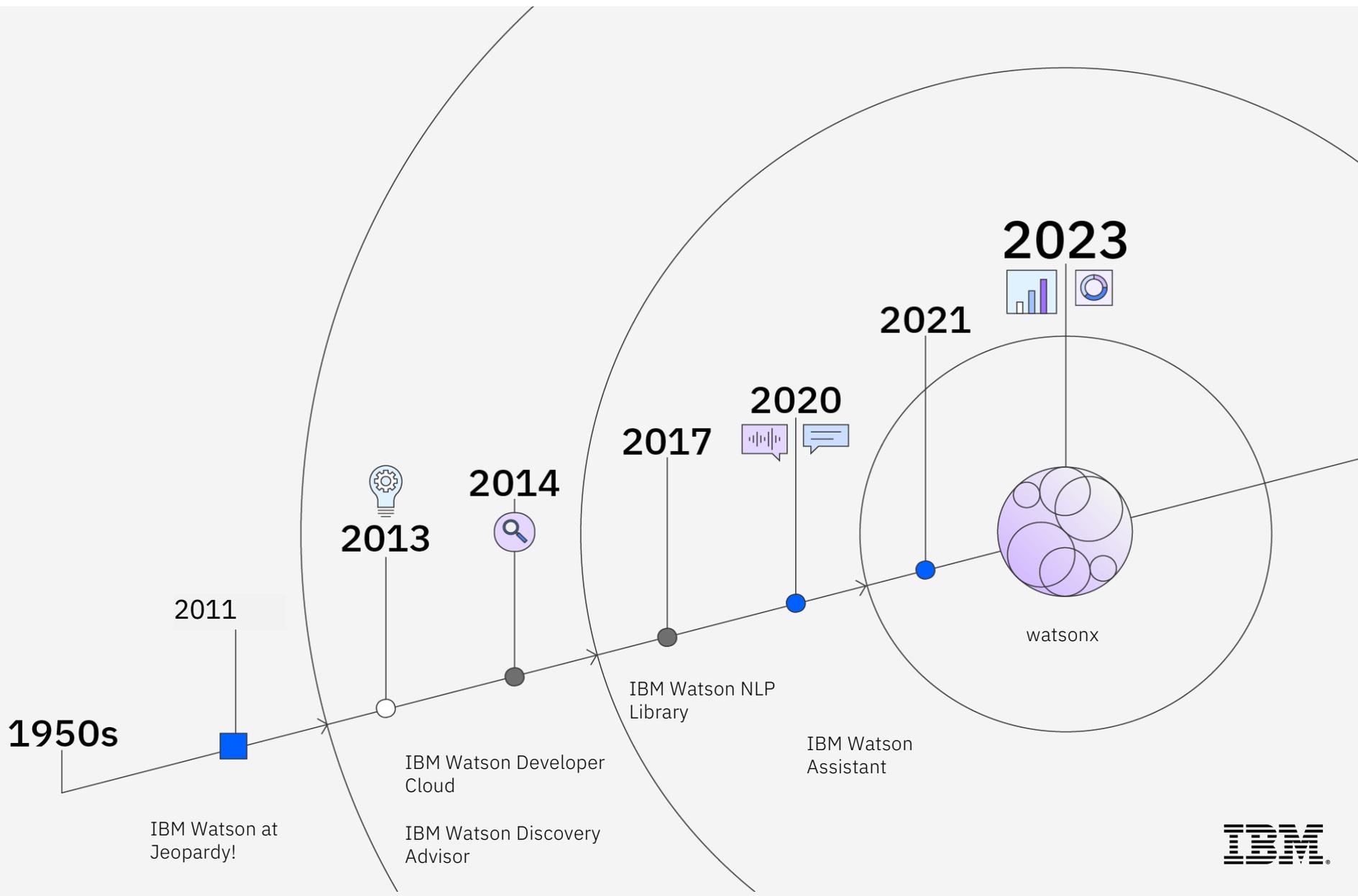
 **IT Ops & Security**

- Coding Copilot, Migration/Modernization ● D
- Technical Documentation & Reporting ● A ● B
- Test Case Development ● A ● B ● D
- Incident Resolution/Error log/RCA ● A ● B ● D

← **Insights & Analytics** ● A ● B ● C →
Talk to Enterprise & External Data

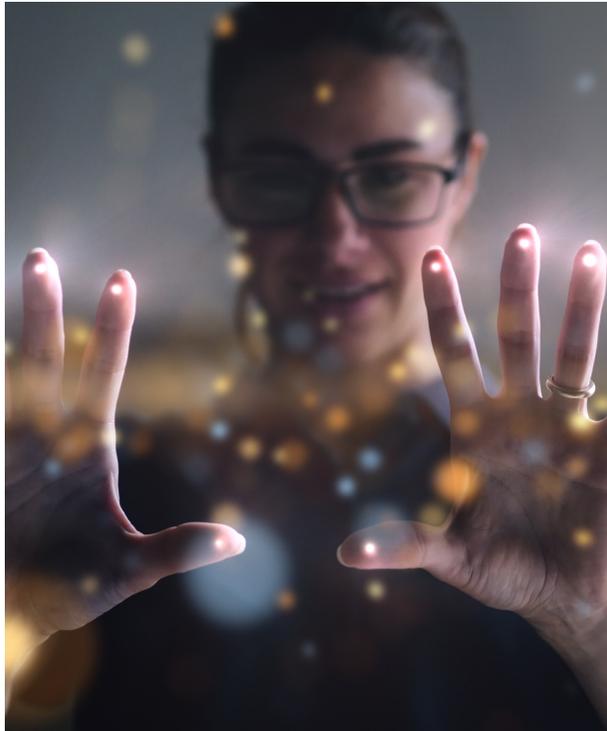
For real business use cases its about the combination...



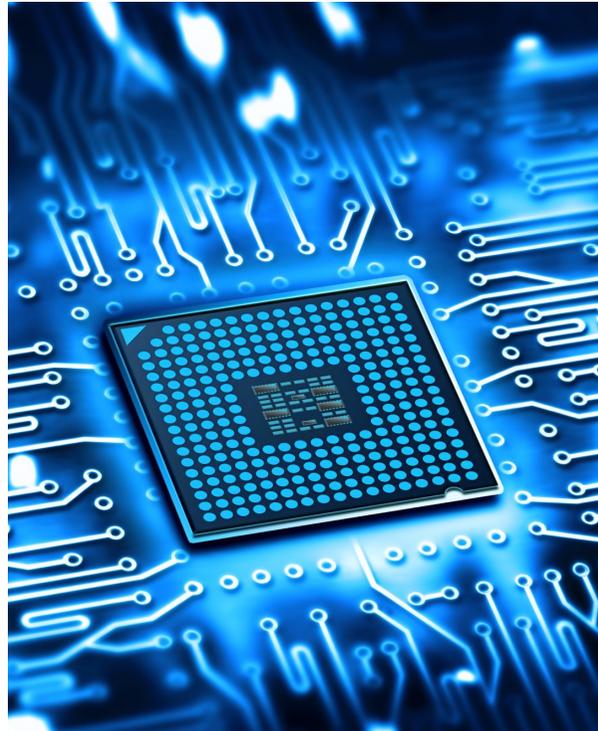


Learning from thousands of briefings and 600+ pilots and more than 150 references across all sectors and use-cases!

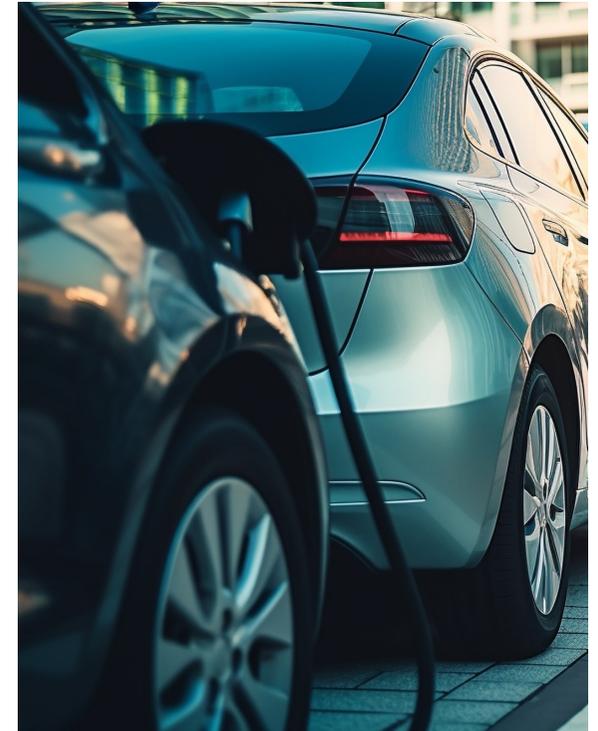
Experience



Technology & Data



Industry & Domain



* * * * *



IBM

Our expertise aligns to what clients need to scale AI across the enterprise

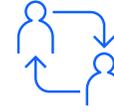
AI will be multi-model and hybrid cloud



ROI depends on the right use case and model selection



Clients need support aligning pilots to business value



Data matters to move from pilot to production



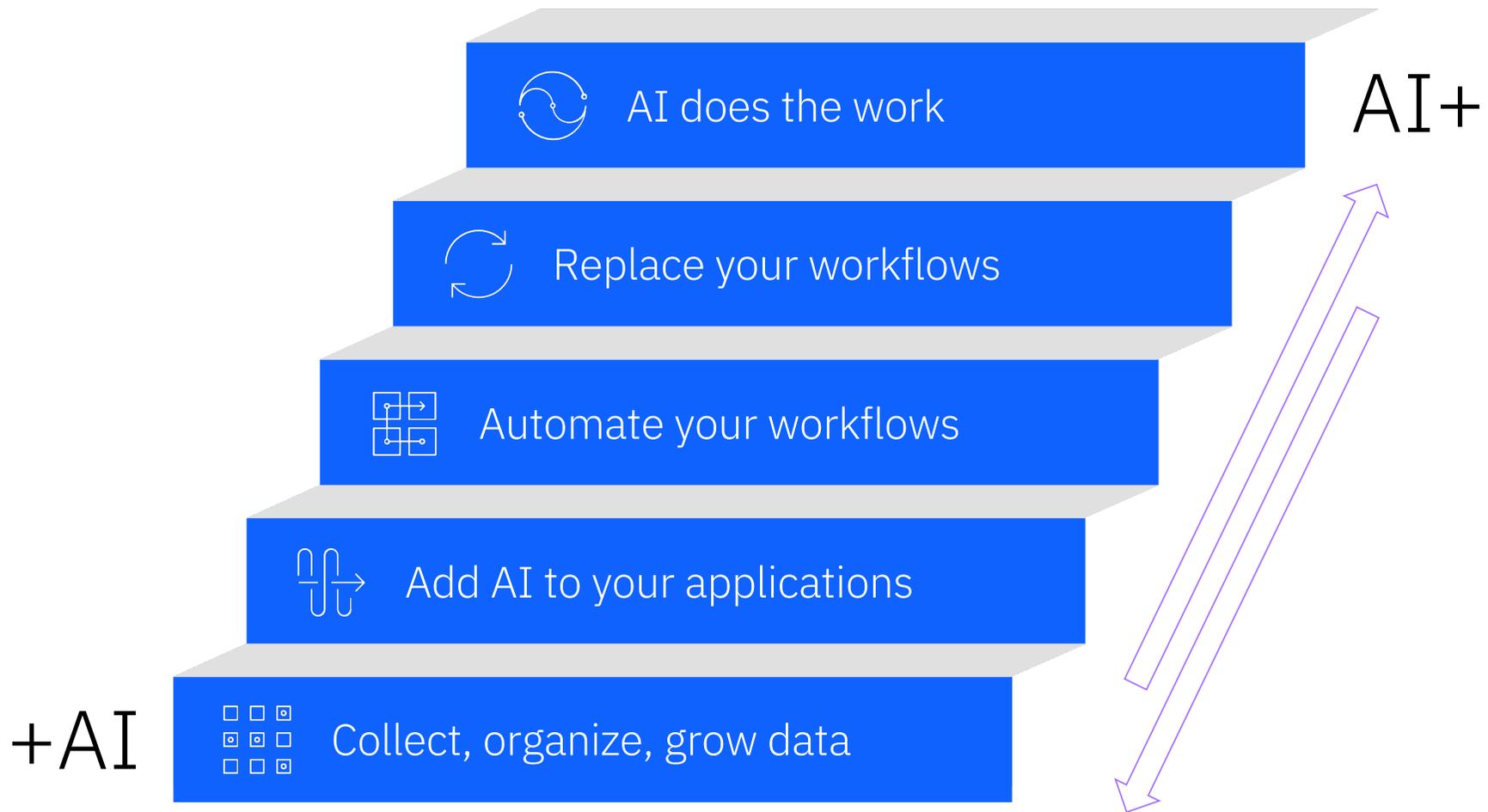
Governance needs to be addressed at the CEO and Board levels to scale AI



+ AI → AI +

Reinventing how work gets done across
business domains and industries

The modern-day AI ladder



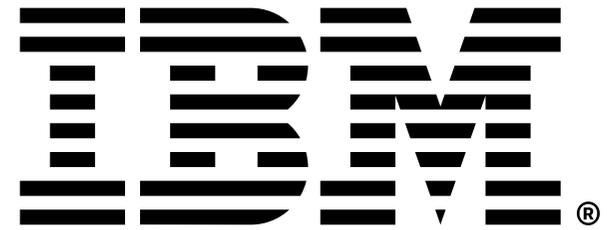




IBM



dun & bradstreet





OFFICIAL PARTNER



IN PURSUIT *of* GREATNESS

IBM POV: Four core principles to tailor generative AI for enterprise

Open

→ Based on the best AI and cloud technologies available

→ Giving access to the innovation of the open community and multiple models

Targeted

→ Designed for targeted business use cases, that unlock new value

→ Including curated models that can be tuned to proprietary data and company guidelines

Trusted

→ Built with AI and data governance, transparency, and ethics that support increasing regulatory compliance demands

→ Providing guidance on appropriate models to leverage to create real business value with trust

Empowering

→ On a platform to bring your own data and AI models that you tune, train, deploy, and govern

→ Running anywhere, designed for scale and widespread adoption to truly create enterprise value

What IBM offers

Put AI to work with **watsonx**.



IBM's generative AI technology and expertise

AI assistants 	Empower individuals to do work without expert knowledge across a variety of business processes and applications.	watsonx Code Assistant watsonx Assistant watsonx Orchestrate watsonx Orders		
SDKs and APIs 	Embed watsonx platform in third party assistants and applications using programmatic interfaces.	Ecosystem integrations		
AI and data platform 	Leverage generative AI and machine learning — tuned with your data — with responsibility, transparency and explainability.	<table border="0"> <tr> <td> watsonx watsonx.ai watsonx.governance watsonx.data </td> <td> Foundation models Granite <i>IBM</i> Open Source <i>Hugging Face</i> Llama 2 <i>Meta</i> Geospatial <i>IBM + NASA</i> ... </td> </tr> </table>	watsonx watsonx.ai watsonx.governance watsonx.data	Foundation models Granite <i>IBM</i> Open Source <i>Hugging Face</i> Llama 2 <i>Meta</i> Geospatial <i>IBM + NASA</i> ...
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Data services 	Define, organize, manage, and deliver trusted data to train and tune AI models with data fabric services.	Cloud Pak for Data watsonx Discovery		
Hybrid cloud AI tools 	Build on a consistent, scalable, foundation based on open-source technology.	Red Hat OpenShift AI (e.g., Ray, PyTorch)		

Consulting
 Generative AI strategy, experience, technology, operations

Consulting Assistants

Ecosystem
 System Integrators, Software and SaaS partners, Public Cloud providers

What IBM offers

The platform
for AI and data

watsonx

watsonx.ai

Train, validate, tune,
and deploy AI models

watsonx.data

Scale AI workloads,
for
all your data,
anywhere

watsonx.governance

Accelerate responsible,
transparent, and
explainable
AI workflows

watsonx

Model strategy →

Multi-model, multi-modal,
multi-lingual

One model doesn't fit all use cases.

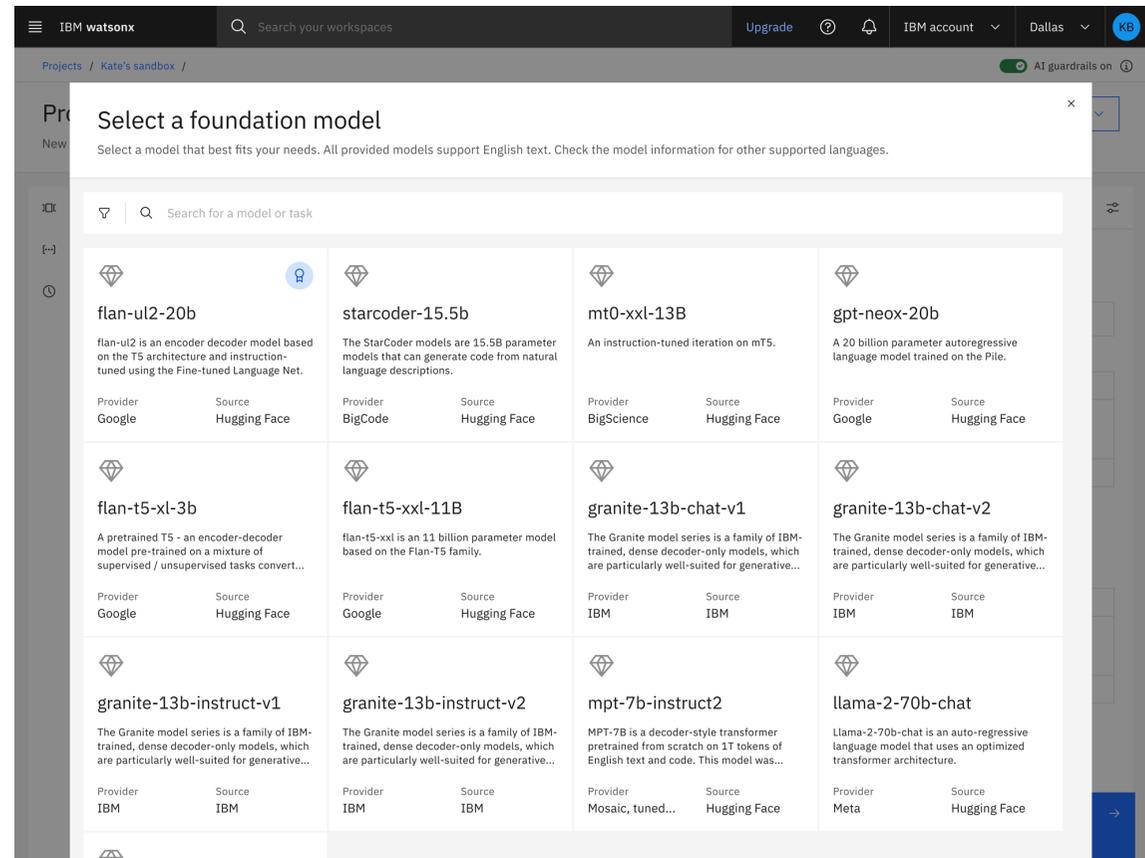
We offer IBM-developed, open-source, third party, and BYOM.

Bigger is not always better.

Specialized models can outperform general-purpose models with lower infrastructure requirements.

Multi-cloud

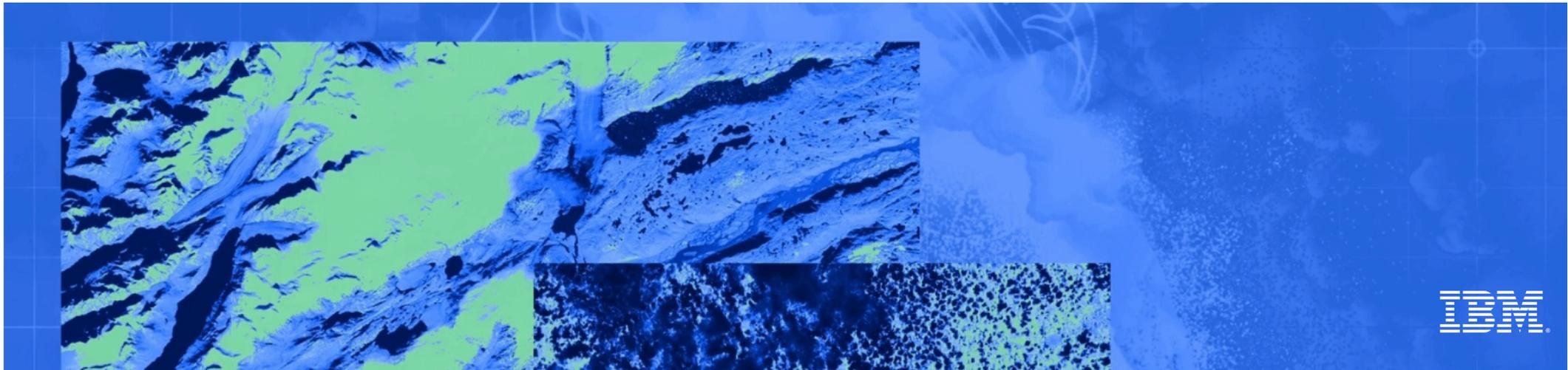
Deploy anywhere. We provide the flexibility to deploy models on the platform of choice.



granite.20b.code is delivered through watsonx Code Assistant

IBM and NASA are building an AI foundation model for weather and climate

The goal is to improve the speed, accuracy, and accessibility of weather forecasting and other climate applications.







Governance is
not an
innovation killer.
Ambiguity is.

Daily news stories highlight improper management of AI



New York Times sued OpenAI for the use of their copyrighted content. **It is essential that data that drives GenAI is owned and safe to use from a legal standpoint.**



Workday has faced many claims their AI tool used in hiring process is discriminatory. **GenAI tools must be ethical and audited against racism, sexism and other prejudices.**



UnitedHealth's AI denied coverage for many patients including elderly. In 90% of the claims, the denial was ultimately reversed. **GenAI needs to be accurate, trustworthy and fair.**



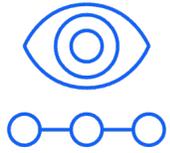
Google was sued for creating GenAI tools based on the data collected by its users without the knowledge that their data would be used in this way. **Transparency of data is needed for both the collection and distribution of GenAI data.**



NYC's AI Chatbot was producing hallucinations and spreading misinformation to users. **Testing and validation of New GenAI tools must be exhaustive and transparent to drive faith and trust in the tool.**



DPD, a UK-based parcel delivery service discontinued its AI Chatbot after a frustrated user coaxed the system into speaking bad about DPD's customer service. **GenAI needs to be consistent and avoid coercion from users to change.**



Governance:

3/4 of all CEOs view ethics as a source of competitive advantage and are delaying major investments until they are prepared



Organizational
AI governance



Automated
AI model governance
in the life cycle

But only

25%

of executives have operationalized common principles of AI ethics

IBM AI Ethics Principles guide us internally & in every project to hold AI to high ethical standard

AI Success = Foundation Models + Data + [Governance](#) + Use Cases

01

The purpose of AI is to **augment** - not replace - human intelligence

02

Data and insights **belong** to their creator

03

New technology, including AI systems, must be **transparent and explainable**

IBM's Pillars of Trust



Explainability

An AI system's ability to provide a human-interpretable explanation for its predictions and insights



Fairness

Equitable treatment of individuals or groups by an AI system

Depends on the context in which the AI system is used



Robustness

An AI system's ability to effectively handle exceptional conditions, such as abnormalities in input



Transparency

An AI system's ability to include and share information on how it has been designed and developed

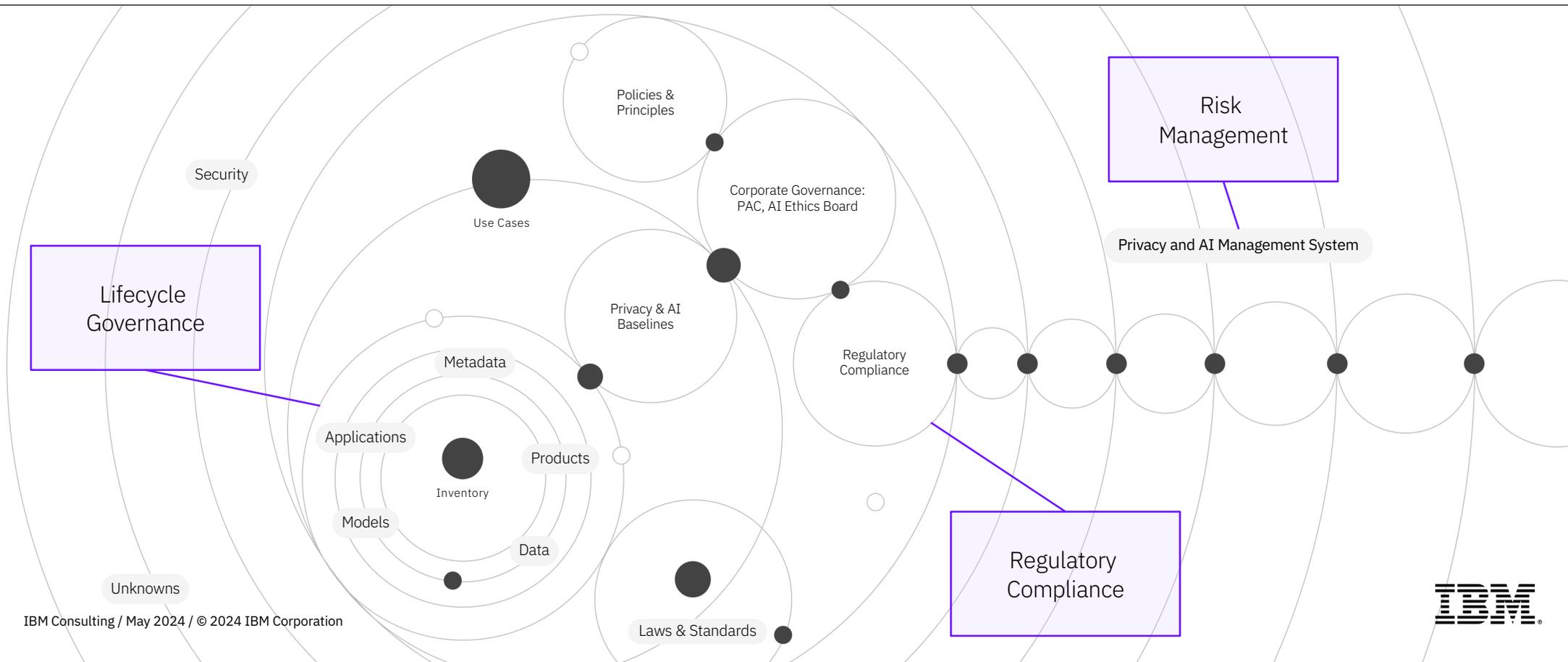


Privacy

An AI system's ability to prioritize and safeguard consumers' privacy and data rights

Businesses need a comprehensive approach to AI Governance

Orchestrating the data and AI universe requires deliberate organizational & technical capabilities to adapt quickly to ever-changing business needs



AI Governance needs to be applied across the business to avoid risks


Accountability


Accuracy


Fairness


Veracity


Transparency


Drift


Trusted data


Energy consumption


Explainability


Adversarial Robustness


IP/PII leakage


Regulatory Risk


Reputational Risk


Operational Risk

Generative AI presents risks which need to be considered and mitigated to scale adoption and users' trust



Foundation models:
Opportunities, risks
and mitigations

	Traditional risks	Amplified risks	New risks
Risks associated with input	<ul style="list-style-type: none"> - Legal restrictions on moving or using (training) data. - Bias - Data transparency challenges 	<ul style="list-style-type: none"> - Copyright and other IP issues with the content. - Inclusion of PI and SPI. 	<ul style="list-style-type: none"> - Vulnerabilities to new types of adversarial attacks like evasion, prompt injection, prompt leaking, and jail breaking.
Risks associated with output	<ul style="list-style-type: none"> - Performance disparity across individuals or groups. - Bias in generation of output. - Copyright infringement. 	<ul style="list-style-type: none"> - Challenges in explaining why output was generated. - Misuse - Exposing PI and SPI in the output 	<ul style="list-style-type: none"> - Hallucination—false content generation. - Explainability and traceability challenges.
Challenges	<ul style="list-style-type: none"> - Documenting data and model details, purpose, potential uses and harms. 	<ul style="list-style-type: none"> - Increased carbon emission due to high energy requirement to train and operate. - Human exploitation, diversity and inclusion. 	<ul style="list-style-type: none"> - Homogenizing of culture and thoughts. - Human agency, impact on education

1. Risks associated with input

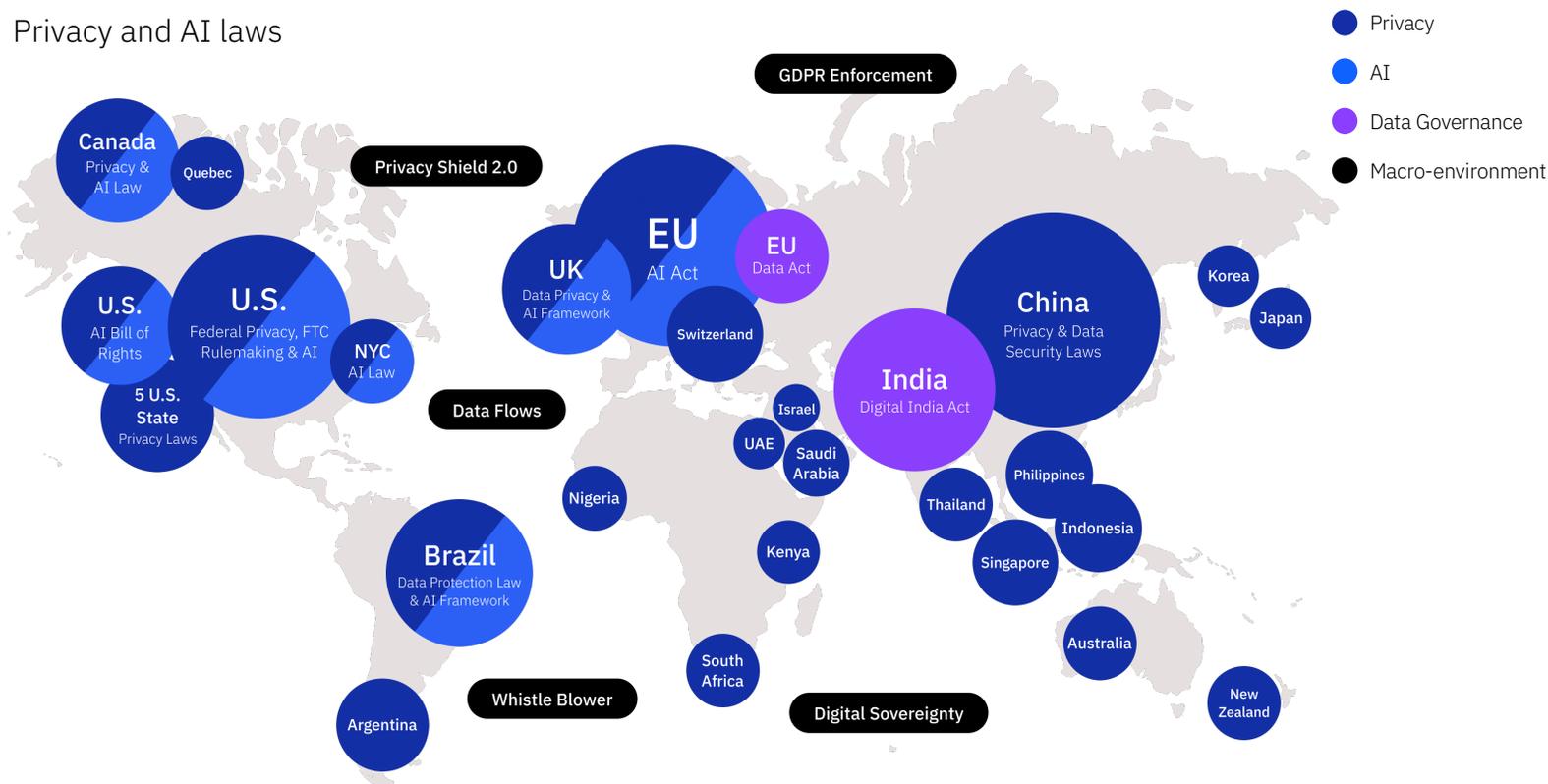
Issue	Risk	Impact
Training and development	<ul style="list-style-type: none"> Privacy: Bias in training, overrepresentation or underrepresentation Performance: Inclusion of personally identifiable information, sensitive information, or confidential information Model: Inaccurate or incomplete training data, leading to model bias or errors Security: Inclusion of sensitive information, leading to data breaches or leaks Intellectual Property: Copyright or other IP issues with the content Transparency: Lack of transparency in the training process, leading to lack of trust 	<ul style="list-style-type: none"> Applicable Applicable Applicable Applicable Applicable
Deployment	<ul style="list-style-type: none"> Privacy: Disclosure of personally identifiable information or sensitive information Performance: Inaccurate or incomplete training data, leading to model bias or errors Security: Inclusion of sensitive information, leading to data breaches or leaks Intellectual Property: Copyright or other IP issues with the content Transparency: Lack of transparency in the training process, leading to lack of trust 	<ul style="list-style-type: none"> Applicable Applicable Applicable Applicable Applicable



AI regulations are here to stay

Oct'23: Biden issued an executive order on Safe, Secure, and Trustworthy Artificial Intelligence which was a paper produced in consultation with companies including IBM.

Privacy and AI laws



31

countries have passed AI regulations.

13

more are debating AI laws.

25

U.S. states have introduced AI bills.

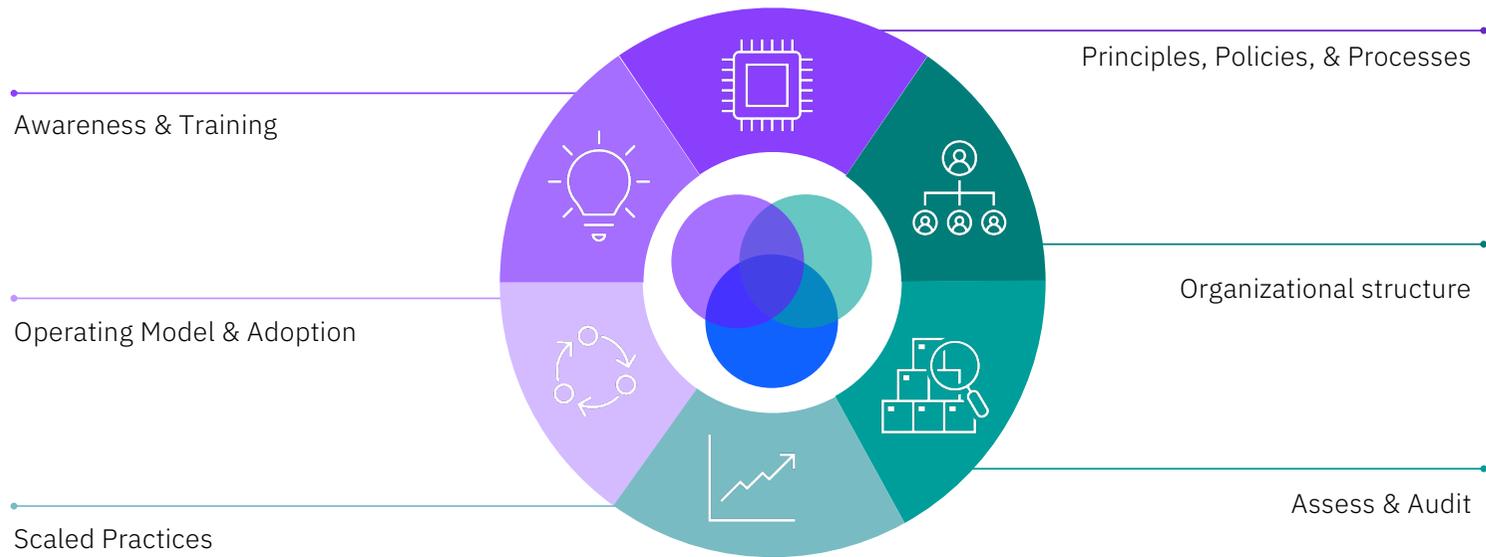
15

more adopted resolutions or enacted legislation.

IBMs response to Australian government on safe and responsible AI - [Consultation hub](#) | [Make a submission](#) - [Supporting responsible AI: discussion paper](#) - [Consult hub \(industry.gov.au\)](#)

An enterprise framework serving as the foundation to establish and **scale AI**

Our Method to Adopt & Scale



Outcomes

Trust in people & culture

Ensure you have the right capabilities, practices, and operating model to design and build for trust.

Trust in processes

Ensure compliance, repeatability and organizational governance for AI at scale

Trust in tools

Increase reliability, robustness and security leveraging solid engineering & technology to across the AI lifecycle



IBM Consulting unveils Center of Excellence for generative AI



AI Success = Foundation Models + Data + Governance + Use Cases + People

Investing in our skills: the IBMer **watsonx** Challenge

158K

registered participants

8K

enhancements and bug reports filed

8M

inference calls in a day

88%

increase in AI skills, according to survey respondents



IBM Introduces IBM Consulting Advantage, an AI Services Platform and Library of Assistants to Empower Consultants

- Enables IBM consultants to build and interact with role-based Assistants powered by IBM watsonx

- Early adopter teams using IBM Consulting Advantage saw productivity improvements of up to 50% in an application design, development and testing pilot

Jan 17, 2024



N 1



A human centred approach

NEON ID: 1242JJ
NAME: NATALI
PERSONA: TXRC720



Synthetic Persona



Shopping Habits

- + Likes to experiment
- + Puts time into researching
- + Mindful of budget
- + Collects designer sneakers
- + Thoughtful and intentional

Pain Points

- + Limited budget
- + Difficulty finding affordable options
- + Time consuming research to stay ahead of trends
- + Limited wardrobe
- + Concerns of sustainability
- + Convenience of renting

ENVIRONMENTAL ENZO

Name: Enzo

Age: 28

Occupation: Graphic Designer

Income: £70k

Enzo is a stylish and creative individual who enjoys experimenting with different fashion styles and trends. He is always on the lookout for new and exciting pieces to add to his wardrobe but is mindful of his budget and seeks affordable options.

He values quality and style, but also wants to be practical with his spending. Enzo is an avid art enthusiast and enjoys visiting galleries and museums in his spare time. He is also a music lover and enjoys attending concerts and festivals. Fashion is one of his biggest interests, and he spends a significant amount of time researching new trends and designers.

Influences

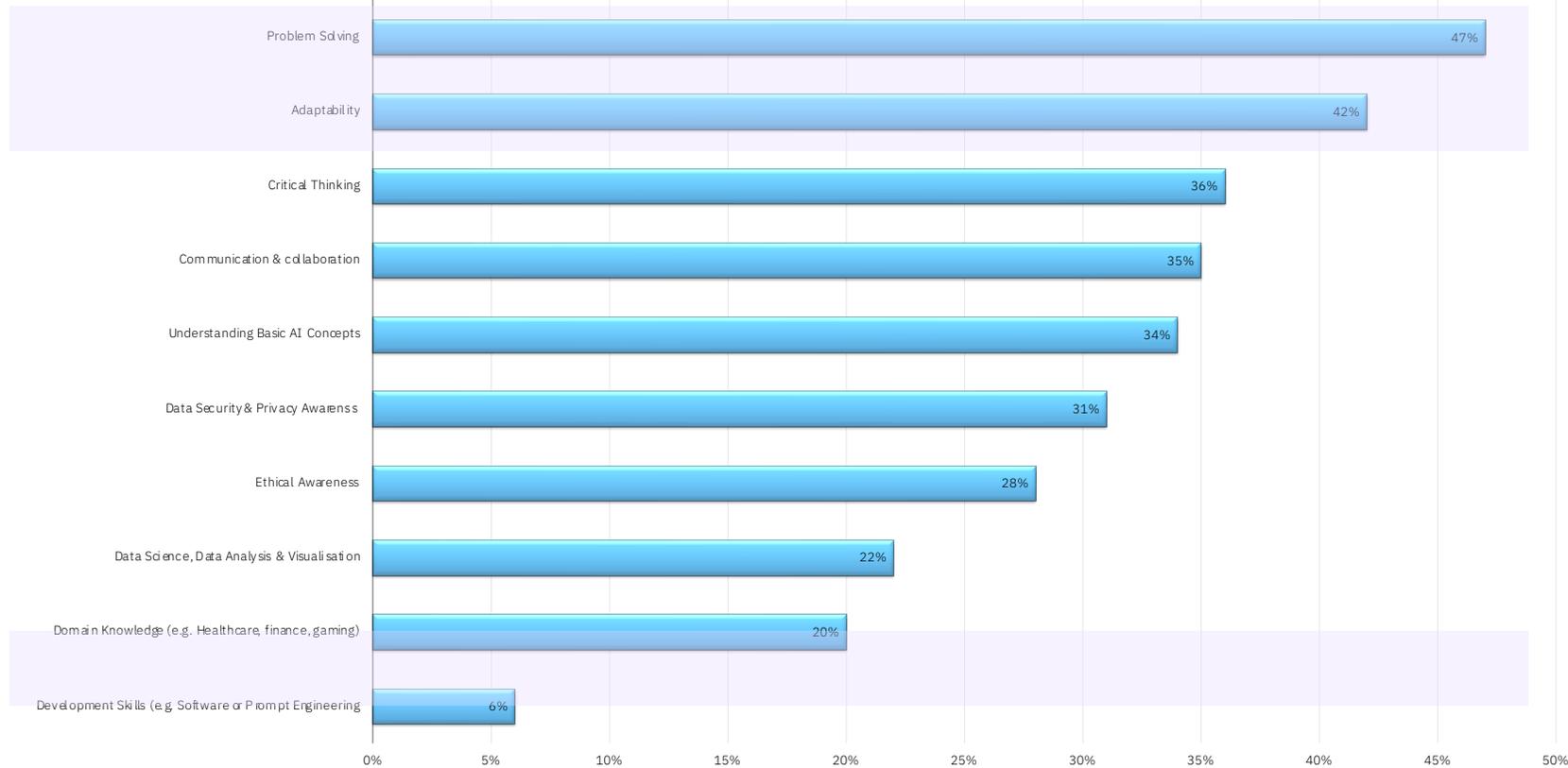
- + British punk rock
- + Country Club Culture
- + Streetwear and sneaker culture
- + Indie music
- + Traditional Craftsmanship
- + Sportswear

Goals

- + Develop his career
- + Express his creativity through fashion
- + Promote sustainable fashion practices
- + Explore new trends
- + Connect with like-minded people

The essential, yet lacking skills for success in Generative AI

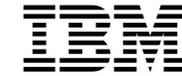
Please select the top 3 skills today's workers **need, but lack** to succeed using Gen AI in the next 12-18 months?



Source: HFS Research, November 2023



IBM GenAI skills development provided on Coursera



The screenshot shows the course page for "Generative AI for Executives and Business Leaders" on Coursera. The course is offered by IBM AI Academy and is available for free. It is a beginner-level course that can be completed in 3 hours over 3 weeks. The page includes a "What you'll learn" section with four bullet points: understanding the history and impact of generative AI, learning about data importance in business AI, knowing the importance of trust, transparency, and governance, and applying generative AI to customer service and application modernization. A "Skills you'll gain" section lists skills in Artificial Intelligence (AI), AI Use Cases, AI Governance, Generative AI, and Applications of Artificial Intelligence. A detailed "Module 1" overview is also visible, listing various activities like readings, assignments, and quizzes.

<https://www.coursera.org/learn/generative-ai-for-executives-business-leaders>

The screenshot shows the specialization page for "Generative AI Fundamentals Specialization" on Coursera. The specialization is a 5-course series with a 4.7 star rating from 179 reviews. It is a beginner-level specialization that can be completed in 1 month at 5 hours a week. The page includes a "What you'll learn" section with four bullet points: explaining fundamental concepts, models, tools, and platforms of generative AI; discussing the limitations of generative AI and ethical concerns; applying prompt engineering techniques; and recognizing the ability of generative AI to enhance career and workplace. A "Skills you'll gain" section lists skills in Artificial Intelligence (AI), Prompt Engineering, Generative AI Careers, Generative AI, and Foundation Models. A list of the five courses in the specialization is also shown.

<https://www.coursera.org/specializations/generative-ai-for-everyone>

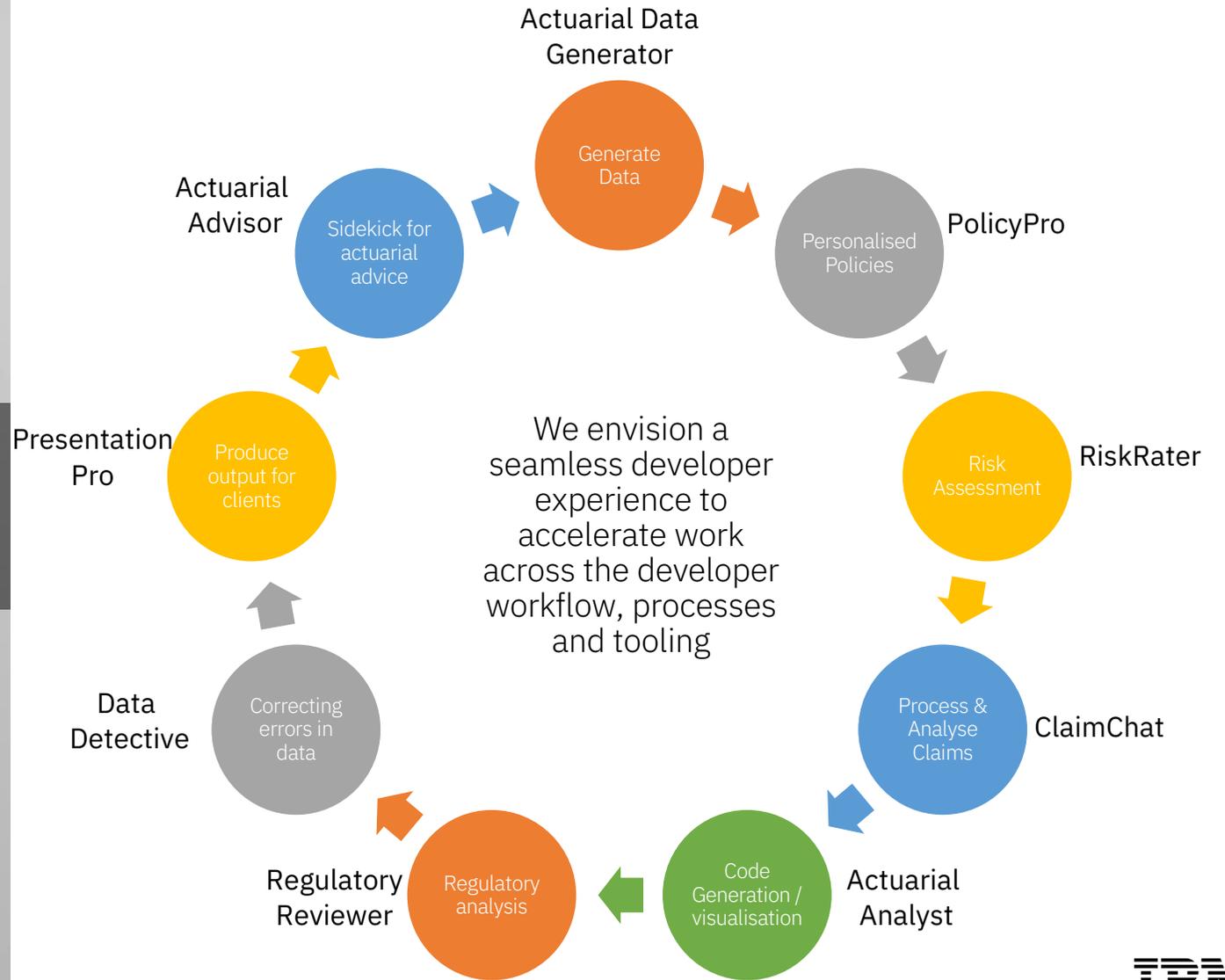


N 1



A human centred approach

NEON ID: 1242JJ
NAME: NATALI
PERSONA: TXRC720



A new era is
on the
horizon

It wasn't too
long ago that
computers
were people.

It wasn't too long ago that computers were people.

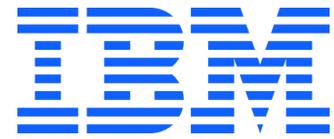


From computer

From
~~computer~~
creator

From
~~computer~~
~~creator~~

To
Co-creators



ibm.com/watsonx