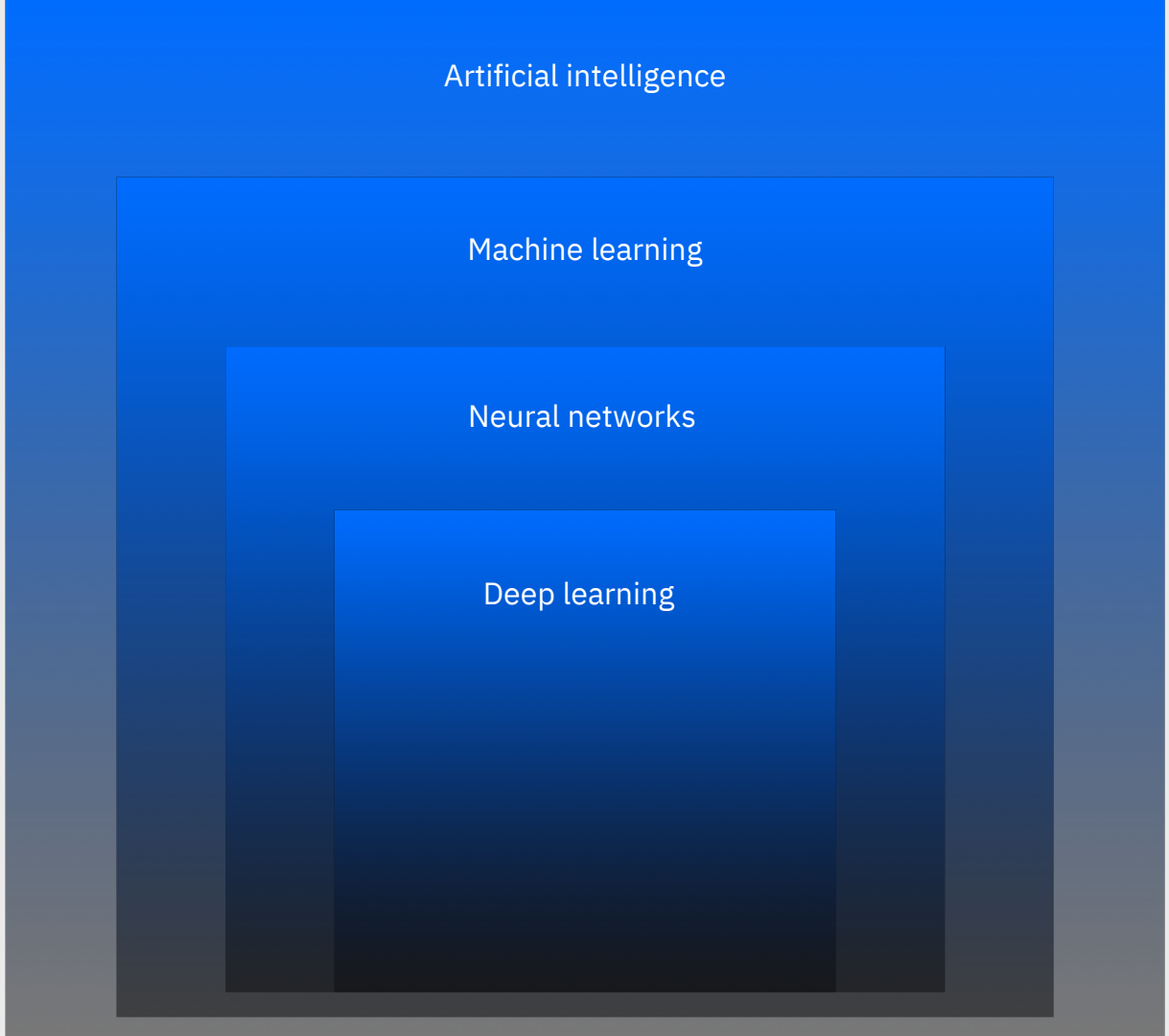
Trusted AI for Business

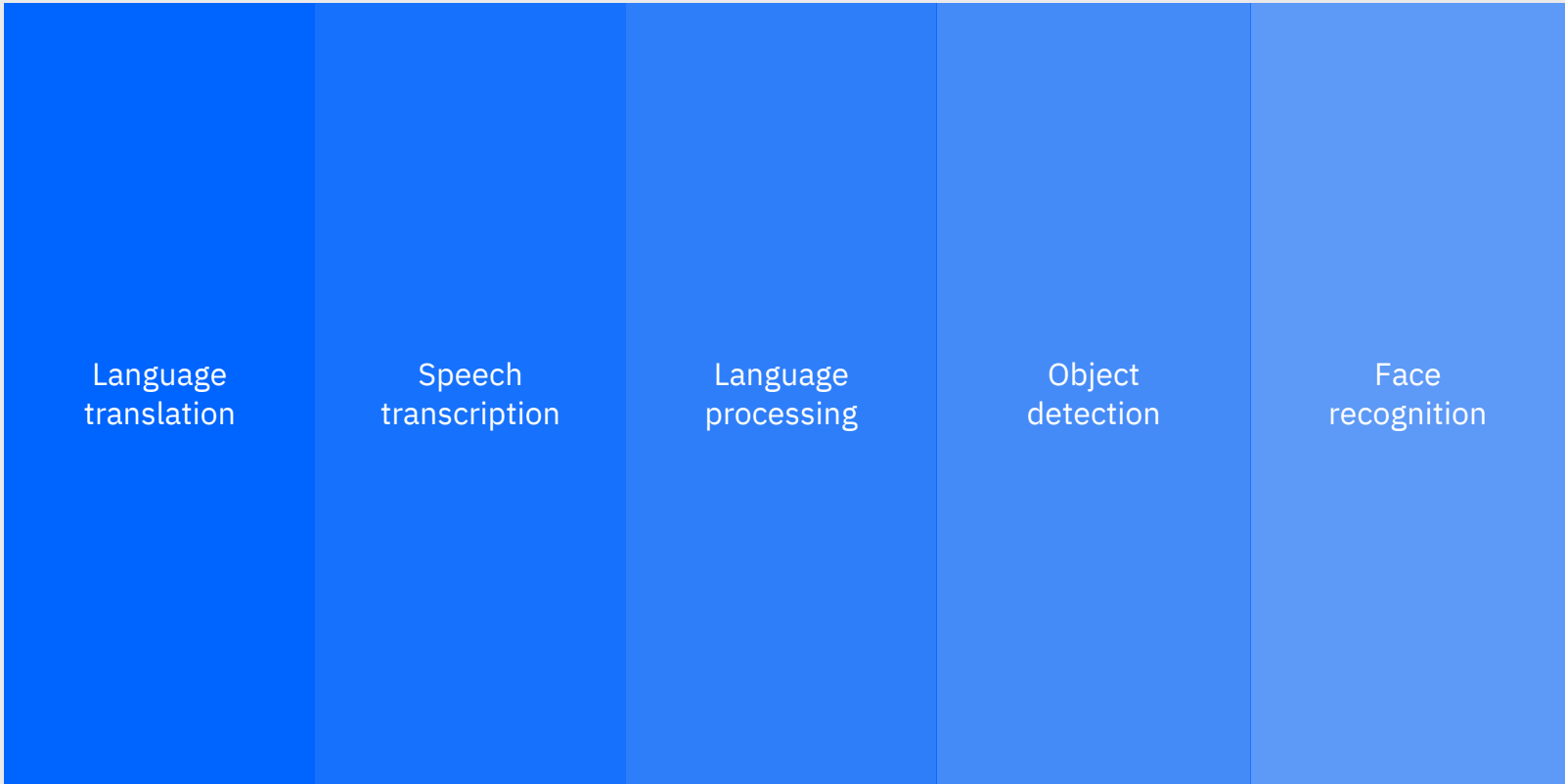
Presented by: **Alessandro Curioni, IBM Fellow, Vice President Europe and Director, IBM Research Zurich**

For: **ETSI Summit on Artificial Intelligence**

AI is...


Artificial intelligence
Machine learning
Neural networks
Deep learning

Specialized AI works incredibly well



94%

of companies believe that AI is the key to competitive advantage

80%

of data is either inaccessible, untrusted or unanalyzed

81%

do not yet understand the data required for AI

1 in 20

companies have extensively incorporated AI into offerings and processes

60%

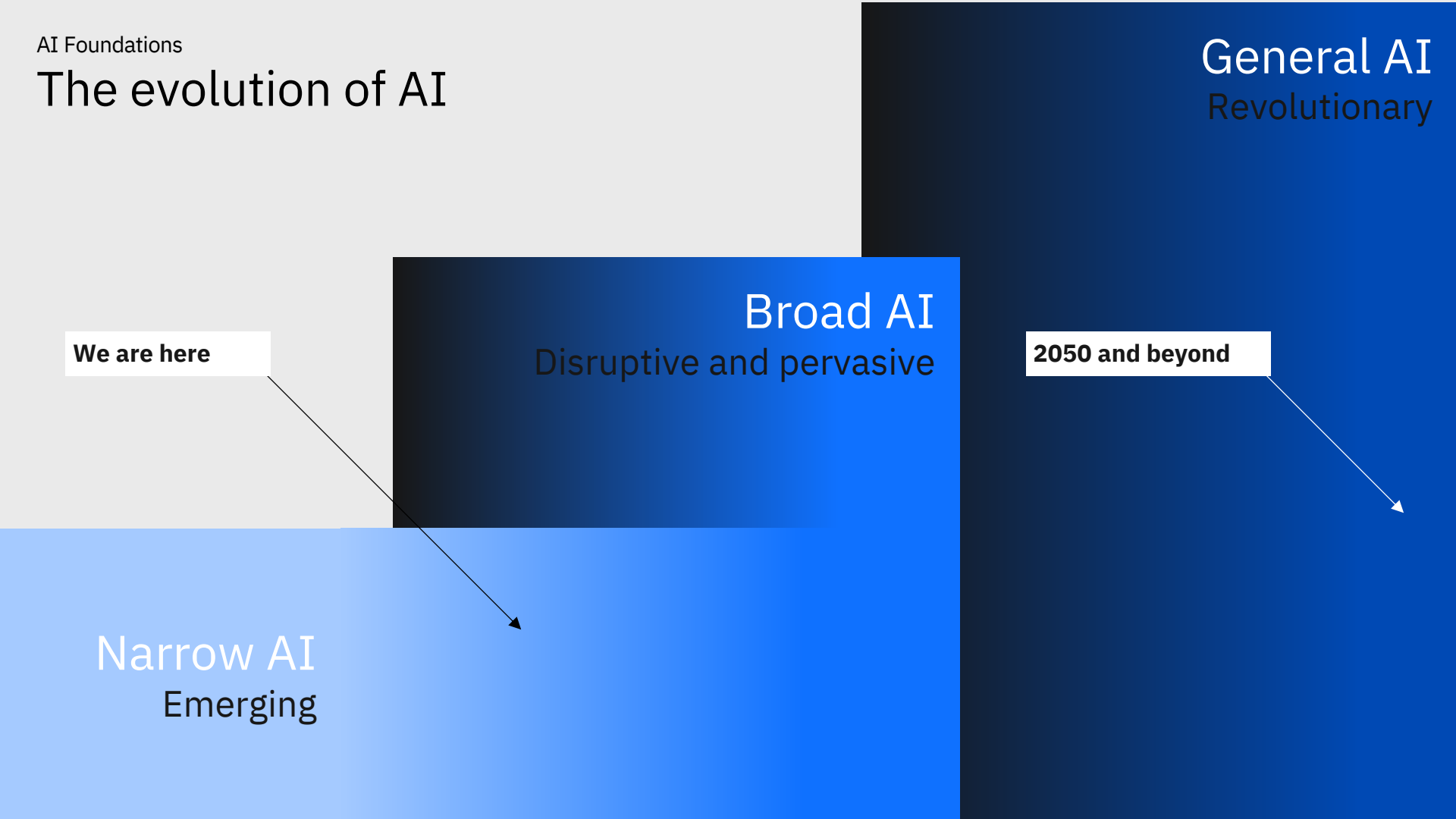
See compliance as a barrier due to a lack of trust in AI outcomes

65%

do not fully trust their own organizations analytics

AI Foundations

The evolution of AI



The evolution of AI

Narrow AI

Deep learning

Single-task, single-domain, with superhuman accuracy

Requires large amounts of labeled data

Broad AI

Learning + reasoning

Multi-task, multi-domain, multi-modal

Learns with much less data

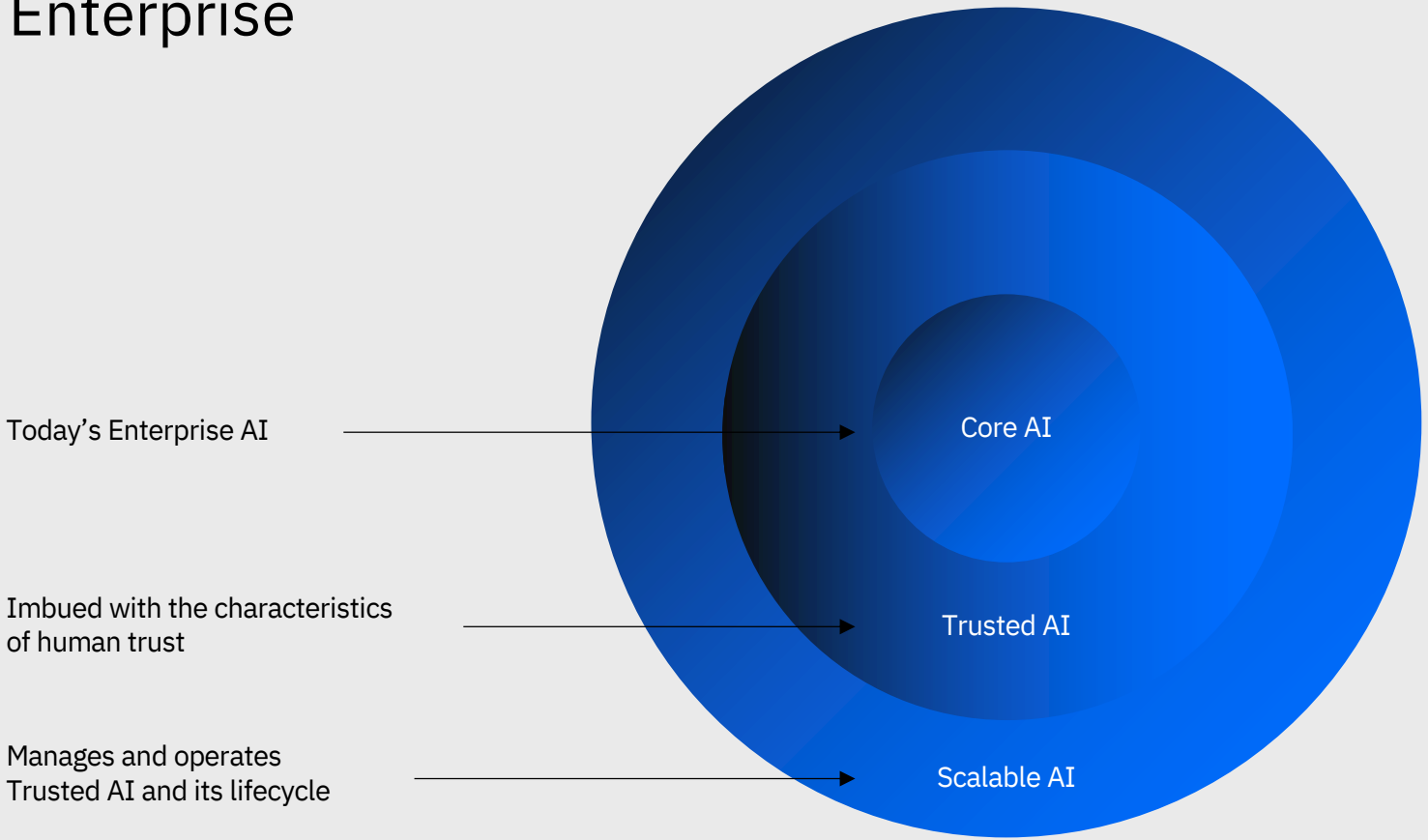
General AI

True neuro-AI

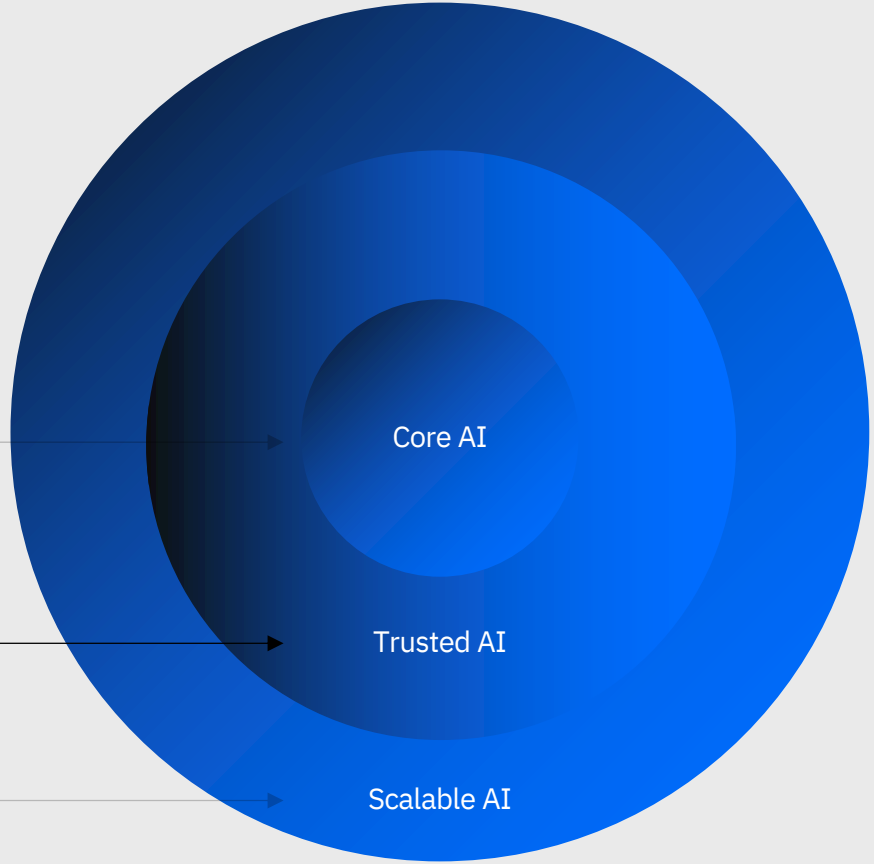
Cross-domain learning and reasoning

Broad autonomy

AI for Enterprise



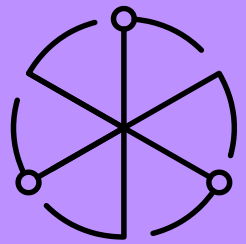
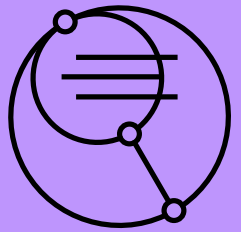
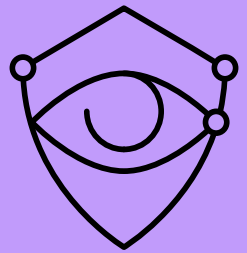
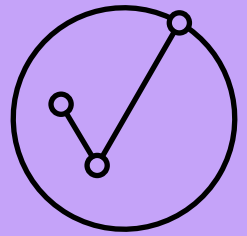
AI for Enterprise



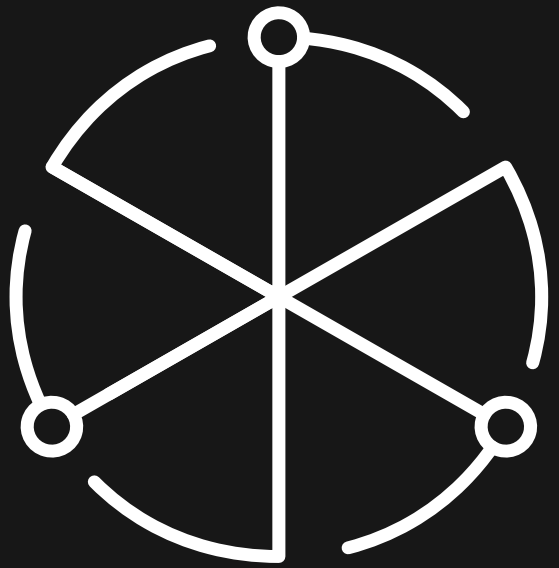
What does it take to trust a decision made by a machine?

Trusted AI

The pillars of trust

Is it fair?	Is it easy to understand?	Is it secure?	Is it accountable?
			
Fairness	Explainability	Adversarial Robustness	Transparency

Making AI Fair



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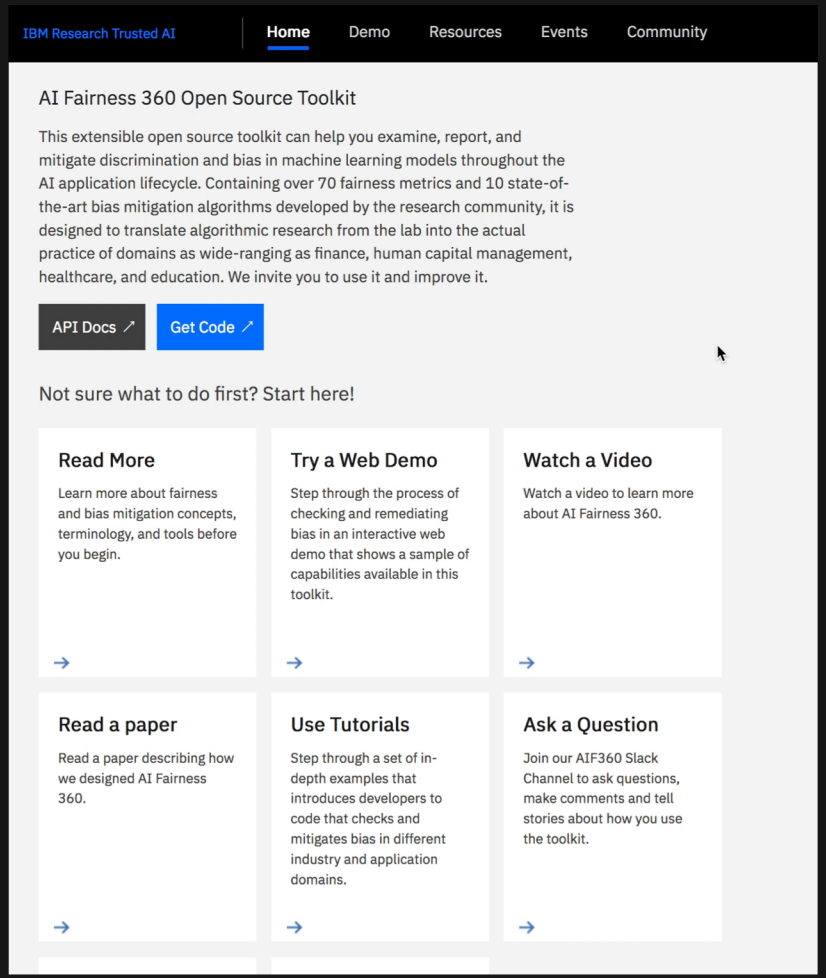
AI Fairness 360:

- 30+ fairness metrics/checkers
- 10 bias “mitigators”
- industry tutorials

aif360.mybluemix.net/



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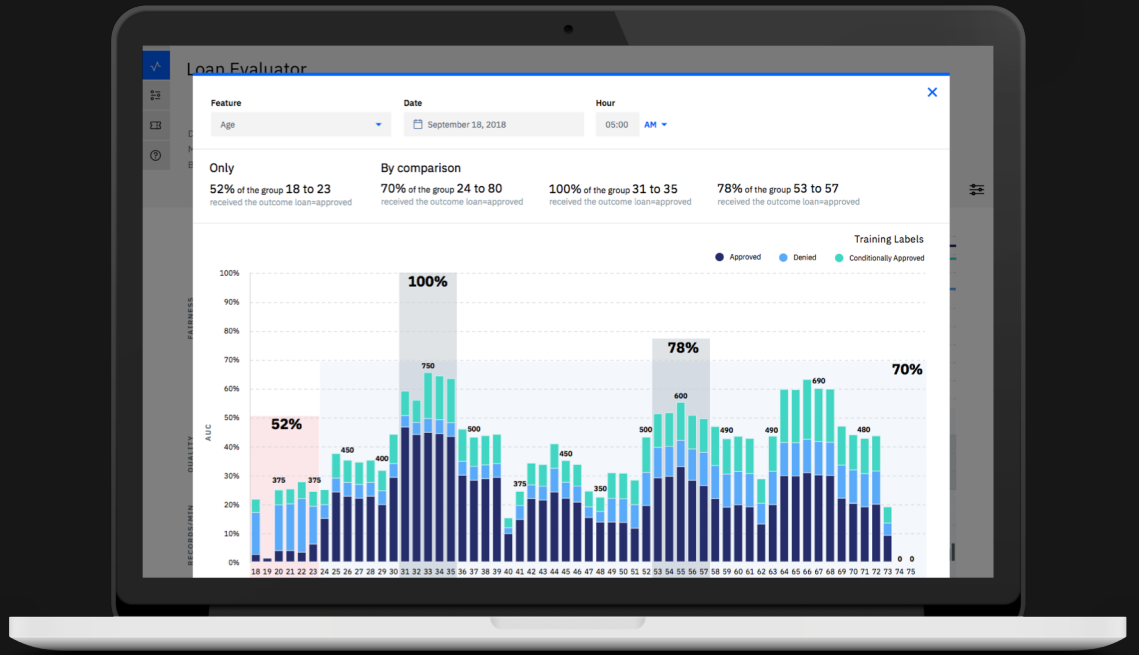
Fairness in action: Watson OpenScale

Operationalizes and instruments fairness into enterprise-grade workloads



Making AI Explainable

Algorithm: Contrastive explanations

We deduce that the image is “3” because,

we observe that curves are present,

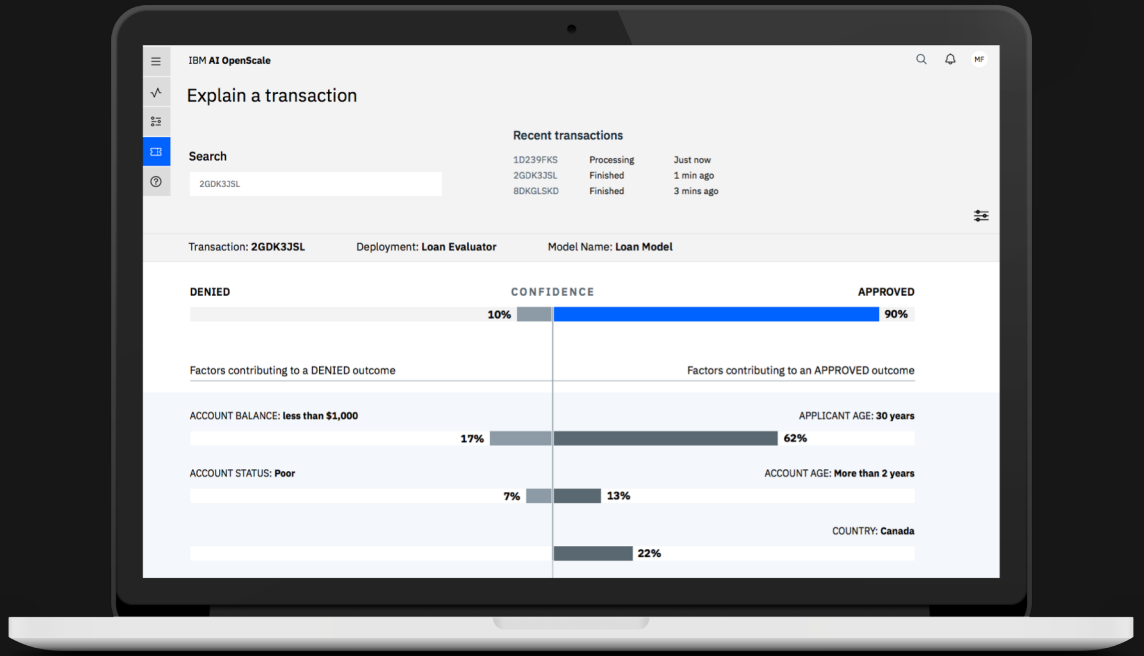
but a dash is absent.

Dhurandhar et al, **“Explanations Based on the Missing: Towards Contrastive Explanations with Pertinent Negatives,”** NeurIPS 2018.

Trusted AI

Explainability in action: Watson OpenScale

Instruments explanations into enterprise-grade workloads



Making AI Secure

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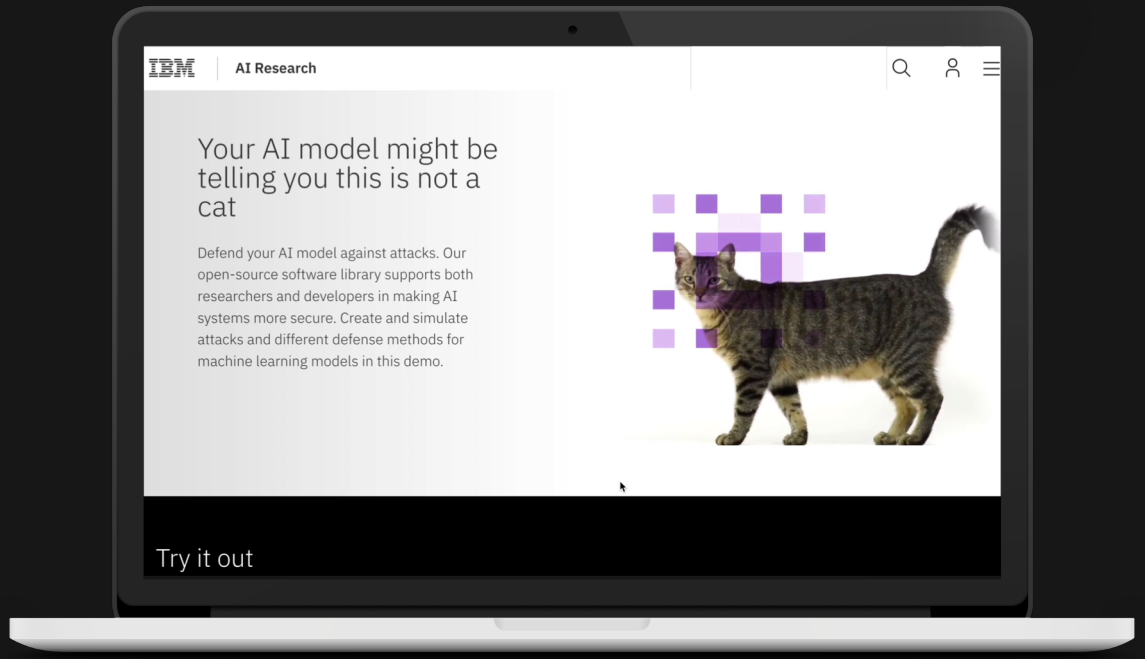
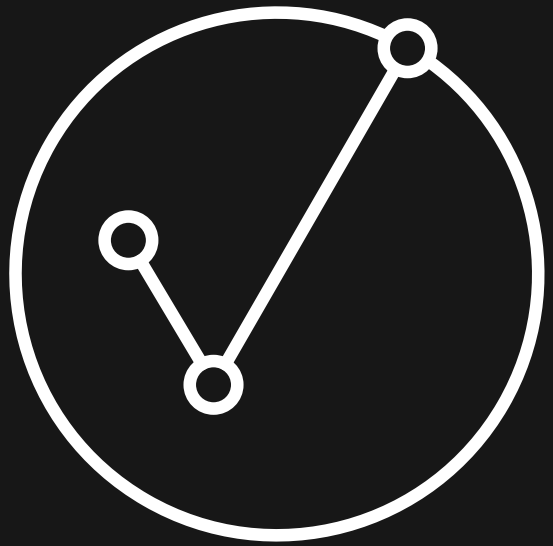
Adversarial Robustness Toolkit

The most comprehensive toolkit for “attacking” and defending AI



https://art-demo.mybluemix.net/

Making AI Transparent



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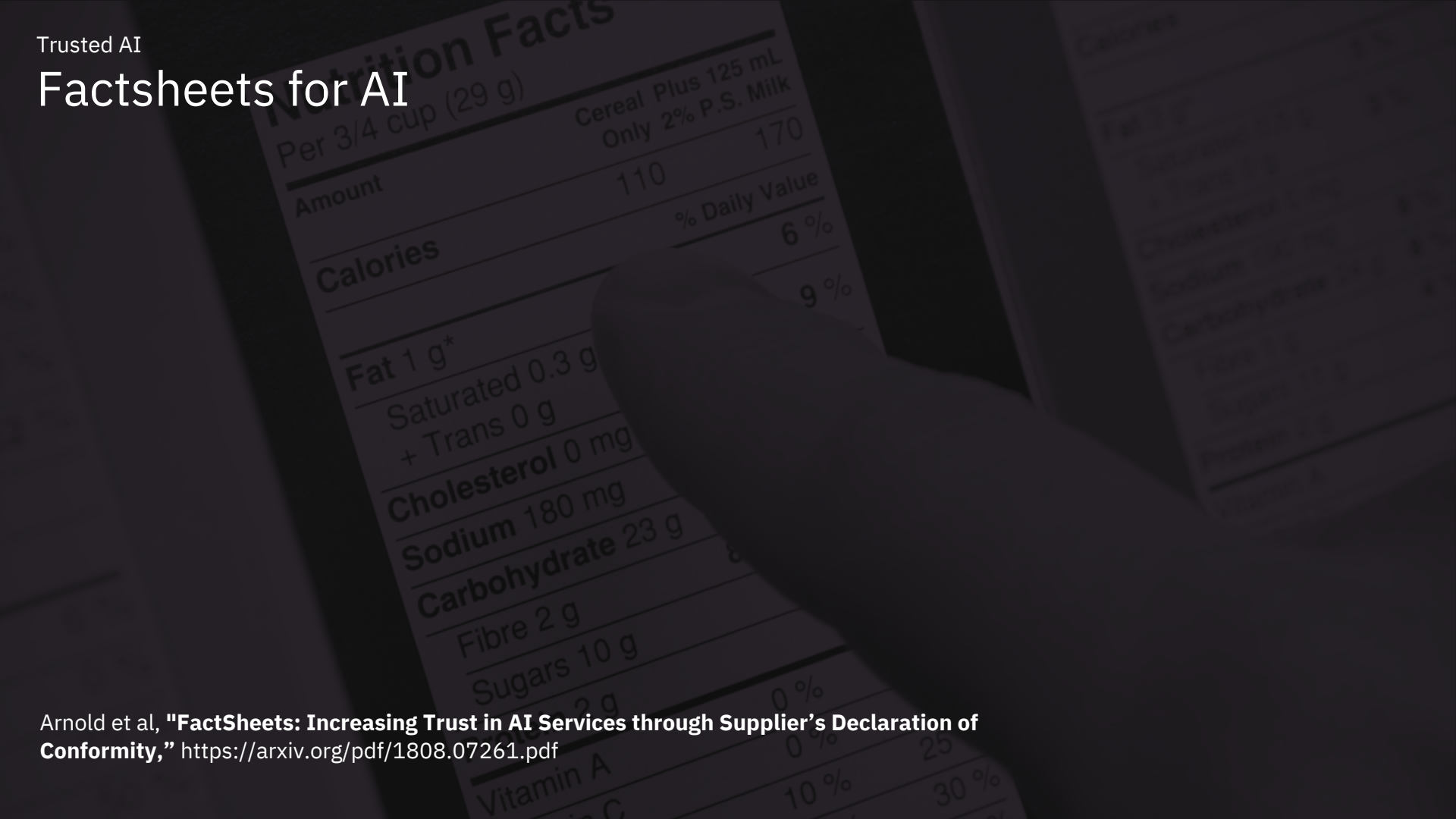
Factsheets for AI



Arnold et al, **"FactSheets: Increasing Trust in AI Services through Supplier's Declaration of Conformity,"** https://arxiv.org/pdf/1808.07261.pdf

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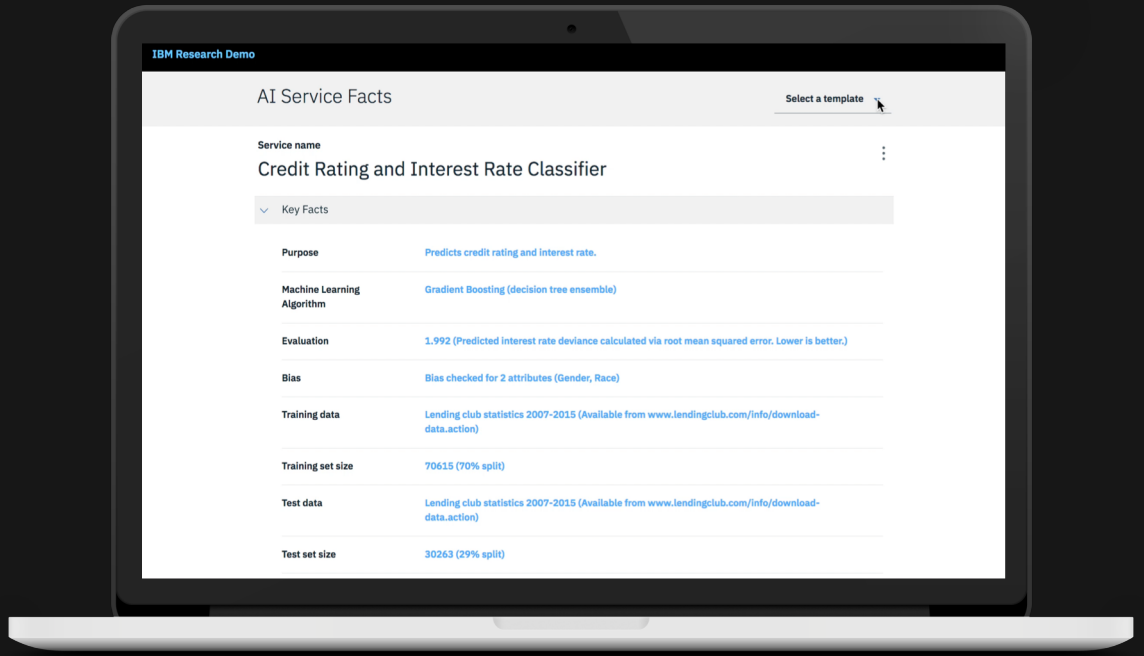
Transparency in action: Factsheets for AI

A transparent reporting mechanism for how an AI system operates and performs



Trusted AI

Coming Soon

Ethics guidelines for trustworthy AI

AI Ethics Guidelines presented by the European Commission's High-Level Expert Group on Artificial Intelligence (AI HLEG).

Building more trustworthy AI systems is not only a research question, it’s a business imperative.