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WFE WORLD FEDERATION OF EXCHANGES

# AI Integration: Ready or Not, Here it Comes

*WFE webinar*
*December 2025*

BUILD SOFTWARE TO TEST SOFTWARE
exactpro.com

# Speakers

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The WFE

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Iosif Itkin

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Anna-Maria Lukina

# Amazing members at wonderful locations

## KRX, South Korea



## Bolsa de Madrid, Spain


## Bursa Malaysia, Malaysia


## TMX, Canada



## JSE, South Africa


## NSE, India


## Borsa İstanbul, Türkiye


# Our publications in the WFE's Focus






# About Exactpro

## Client network spanning 60% of Top 10 and 60% of Top 20 global exchange groups


Exactpro is an independent provider of AI-enabled software testing services for financial organisations.

Our clients are financial market infrastructures across 25 countries. We help our clients to improve scalability, latency, and operational resiliency, decrease time to market, and maintain regulatory compliance.

Headquartered in the UK, Exactpro operates delivery centres in Georgia, Sri Lanka, Armenia, the UK, representative offices in the US, Canada, and Italy, and has a global distributed network of consultants.

**Exactpro offers to review software testing processes and platforms used in your organisation from the AI Testing perspective.**

**WINNER**
DIGITAL ASSETS OWNERSHIP, 2022
**RUNNER-UP**
SYNTHETIC DATA GENERATION, 2021
**HONOURABLE MENTION**
DIGITAL PAYMENTS WITH ISO 20022, 2025

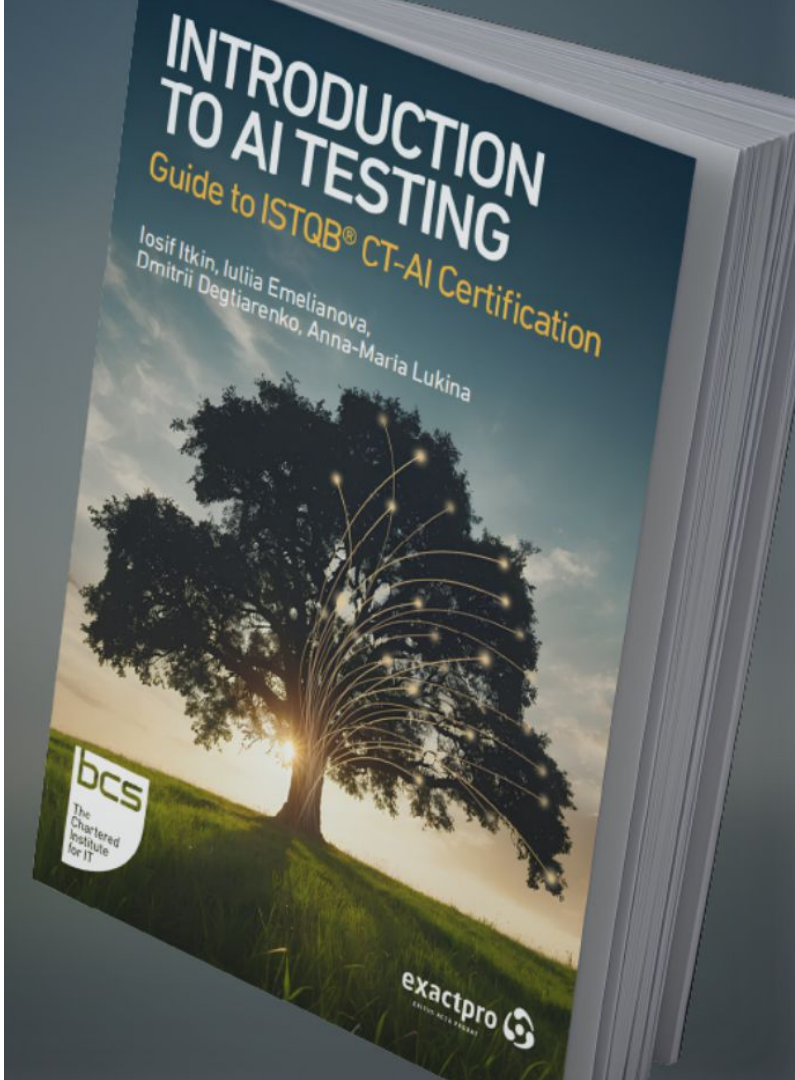
Swift HACKATHON at Sibos

# Introduction to AI Testing: guide to ISTQB® CT-AI certification

Over the past year, we have worked hard to aggregate the main aspects of our **AI Testing training** in our upcoming book – Introduction to **AI Testing: Guide to ISTQB® CT-AI Certification** – that we were delighted to present at our stand throughout Sibos.

**Get Introduction to AI Testing**

The book offers a **comprehensive introduction** to artificial intelligence and machine learning fundamentals, helping build in-house **AI excellence** and lay the groundwork for **responsible development and deployment of AI**. It equips software testers and developers with the skills to effectively leverage AI-powered solutions for testing complex systems and AI applications. It also fully prepares readers for the ISTQB® Certified Tester AI Testing (CT-AI) certification exam.

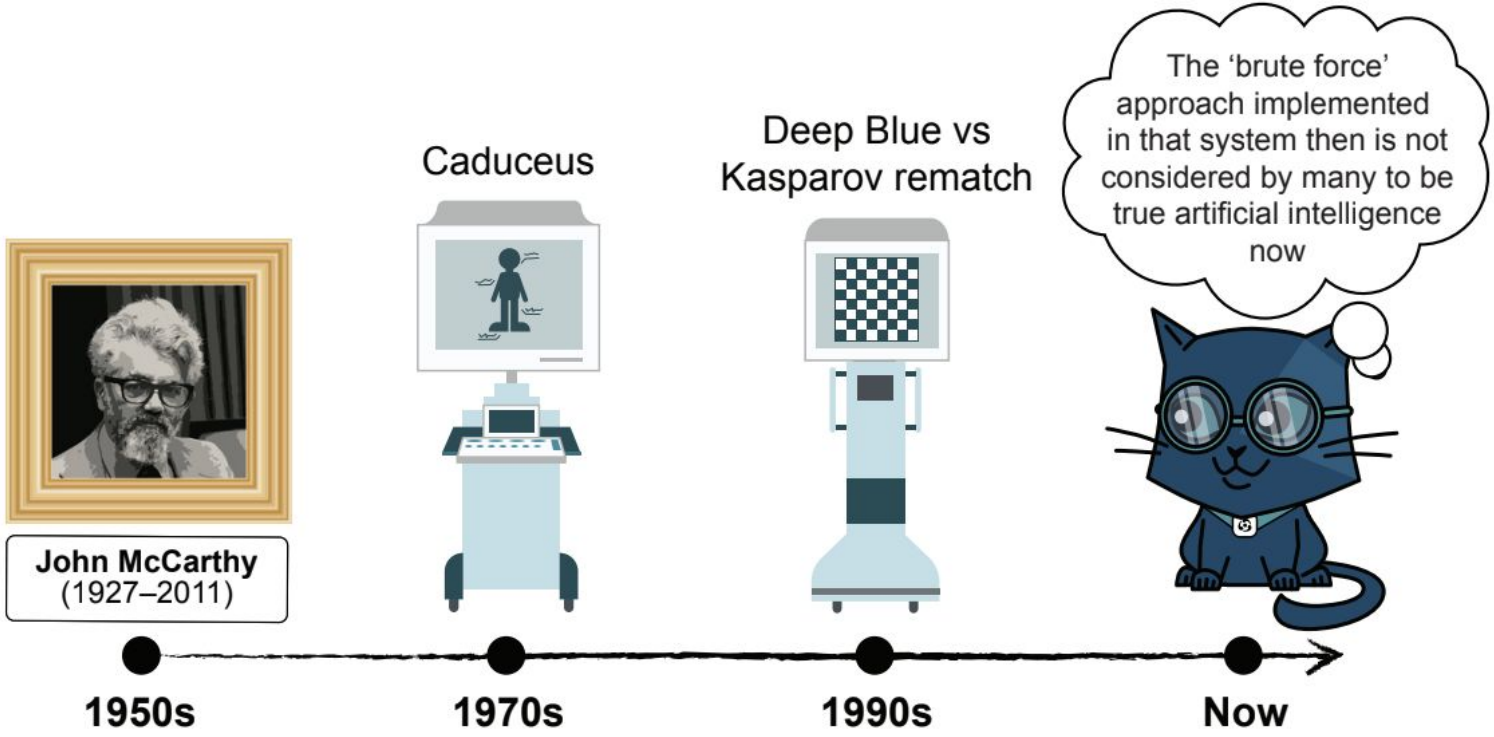


# Socrates said

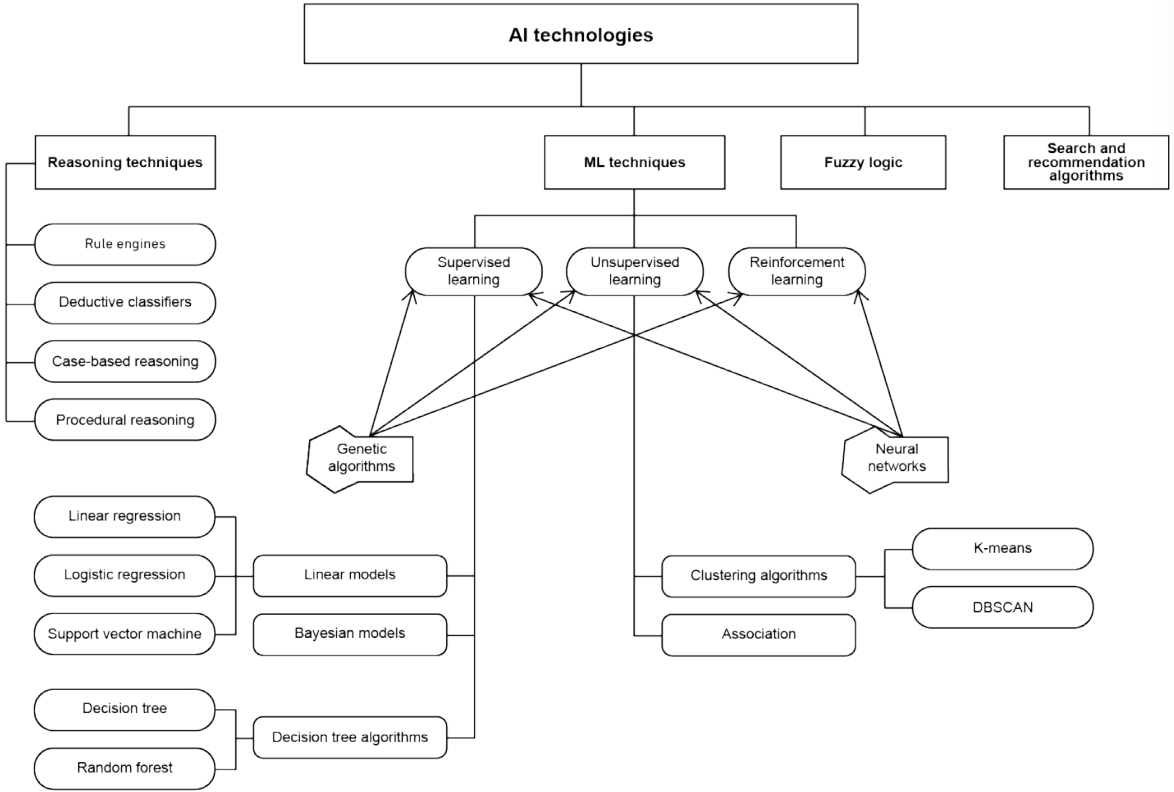
**The beginning of wisdom is the definition of terms**

**I know that I know nothing**

# Definition of AI and the AI Effect



# Definition of AI and the AI Effect

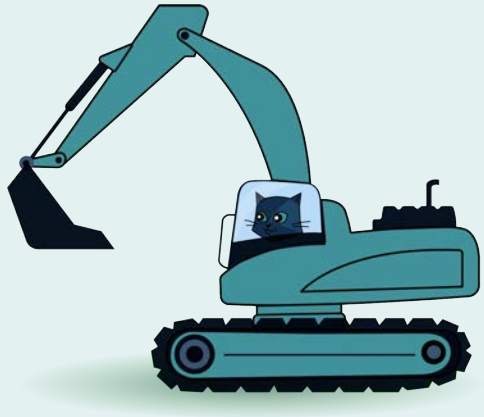





# The AI Productivity Paradox?

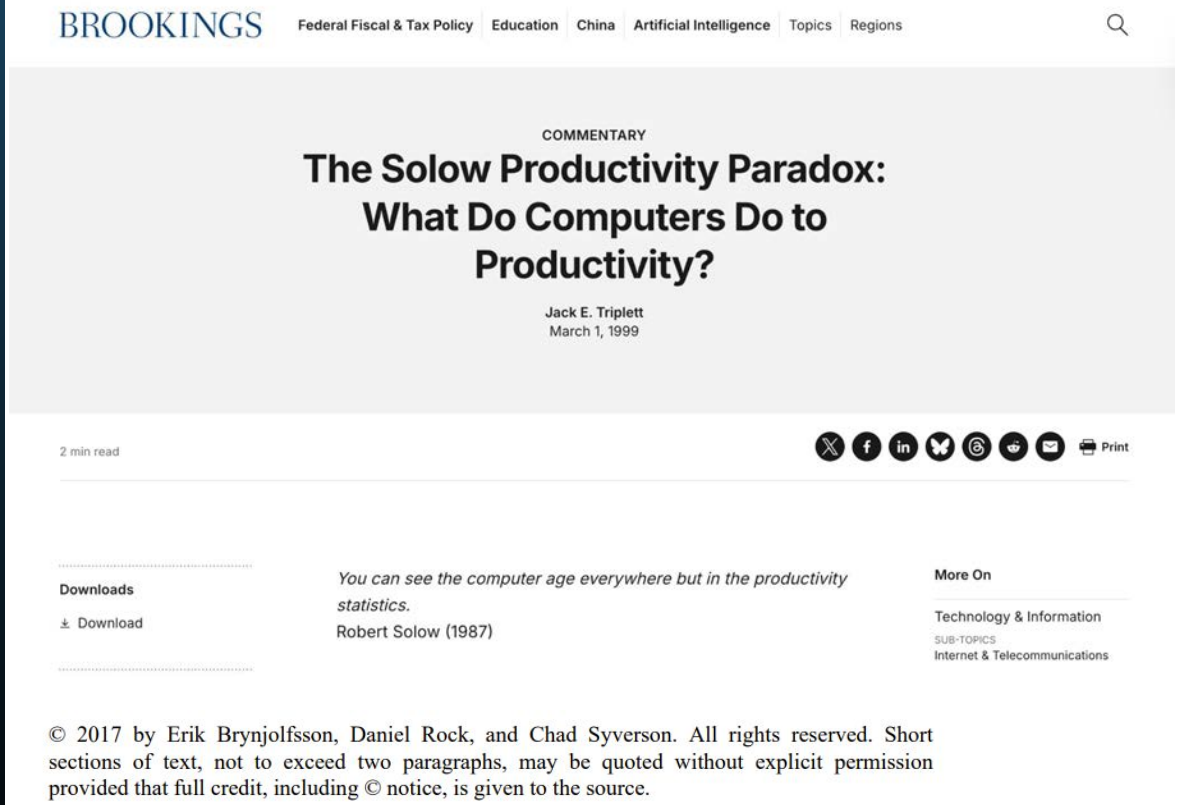
**Anthony Butler**
30 MAR 2025 — 3 MIN READ

Most people believe AI is already transforming workplace productivity. Tools like ChatGPT are everywhere. Workers are writing faster, coding more efficiently, and summarising dense documents in seconds. But here's a less popular, but increasingly important idea:



> The productivity gains from today's AI tools largely accrue to the employee—not the firm.

This isn't to say the gains aren't real. They are. But they're localised, private, and unstructured. An employee may finish a task in half the time, but that doesn't mean the firm gets twice the output. Often, the surplus is absorbed by inefficiencies elsewhere: meetings, distractions, idle time. The structure of production hasn't changed. Coordination costs remain high. Measurement is difficult. And critically, the firm struggles to capture, monitor, or even notice the marginal value being created.



BROOKINGS Federal Fiscal & Tax Policy Education China Artificial Intelligence Topics Regions

COMMENTARY

# The Solow Productivity Paradox: What Do Computers Do to Productivity?

Jack E. Triplett
March 1, 1999

2 min read Print

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*You can see the computer age everywhere but in the productivity statistics.*
Robert Solow (1987)

More On
Technology & Information
SUB-TOPICS
Internet & Telecommunications



"This is not a new phenomenon. In the 1980s, Robert Solow famously observed: "You can see the computer age everywhere but in the productivity statistics." The same paradox may be playing out again with generative AI—ubiquitous adoption, but elusive aggregate gains."

A.Butler

# Easy for one

- ★ Frictionless Adoption for Individuals
- ★ Unstructured Creativity and Flexibility
- ★ Less Risk of Hallucination at Personal Scale
- ★ Personalized Use vs. Generalized Integration

# Difficult for many

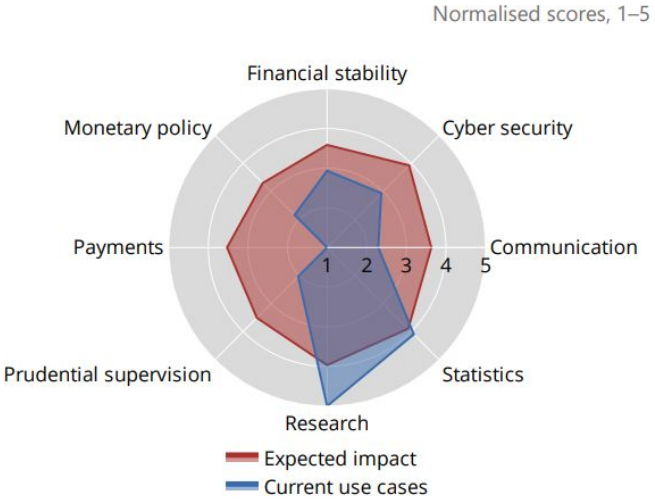
- ★ Security and Compliance Concerns
- ★ Integration Challenges
- ★ Unclear ROI Models
- ★ Internal Communication Challenges

# IFC Report No 18
# Governance and implementation of AI in central banks

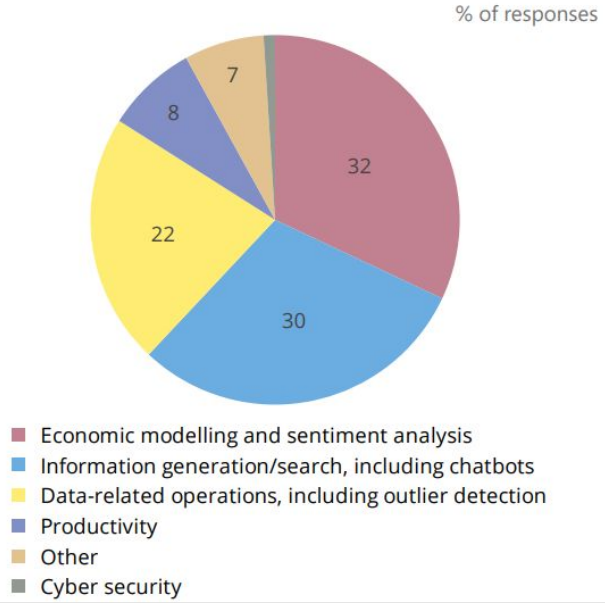
Despite high expectations, current AI-based applications remain limited and primarily relate to economic research, communication chatbots and statistics

Graph 6

A. Expected impact and current applications of AI/ML[1]




B. Reported AI/ML use cases by application scope[2]




1 Expected impact is calculated as the average of the responses rated on a scale from 1 to 5 (1 = not sure; 2 = not impactful at all; 3 = slightly impactful; 4 = moderately impactful; 5 = highly impactful).
The number of current use cases is presented normalised on a scale from 1 (min) to 5 (max).

Sources: IFC survey on AI and ML (2024); authors' calculations

www.bis.org/ifc/publ/ifc_report_18.pdf

# Artificial Intelligence incident database

- Erroneous Declined Transaction Notification by PayPal AI Assistant
- Self-driving Waymo cars honking at each other at night
- Anysphere AI Support Bot for Cursor Reportedly Invents Login Policy, Leading to Subscription Cancellations
- Roomba testers feel misled after intimate images ended up on Facebook
- Air Canada Chatbot providing false information
- McDonald's ends AI drive-through trial
- ITutor's age discrimination
- Amazon Scraps Secret AI Recruiting Engine that Showed Biases Against Women
- Google AI Makes Up Fake Sayings
- Amazon's Alexa becoming liberal
- Chevrolet Dealer Chatbot Agrees to Sell Tahoe for $1
- New York City chatbot that advised entrepreneurs to break laws
- Tesla Autopilot Incidents
- DPD's chatbot swears and criticises delivery firm

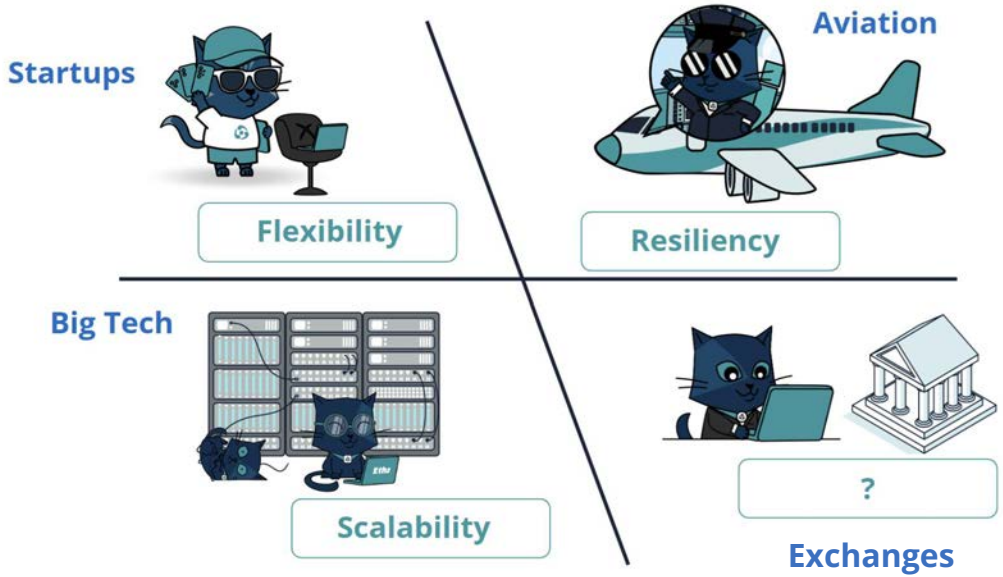
Note that over **3000 model-based failures** have been identified to date.



# Exchanges in comparison to other systems

- Principle- and outcome-based regulatory frameworks
- Expectation of robust governance and operational resilience
- Technological and epistemological complexity
- Massive transformations
- Adopting the new, aligning with existing systems
- High visibility and impact on national economy and society
- Budget and time constraints
- Centralisation and no canary deployments
- **Data quality & bias**
- **Non-deterministic behaviour**
- **Huge integration ecosystems**
- **Rapid tech change**

And more...



# Are these challenges unique to AI systems?

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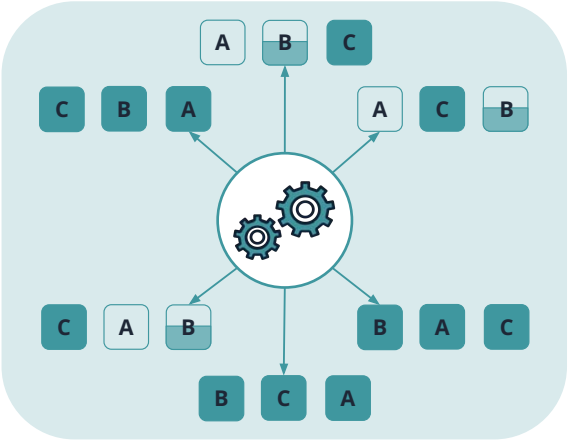
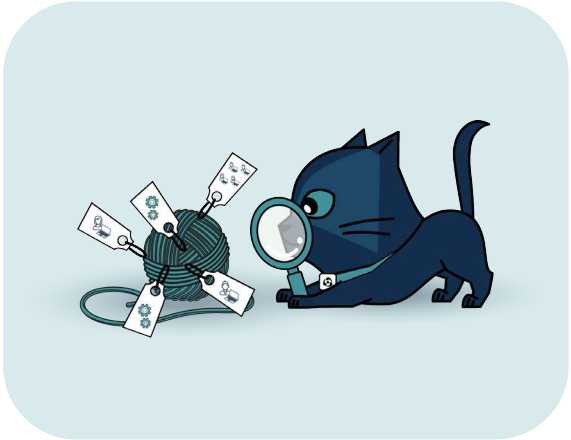
## Non-determinism

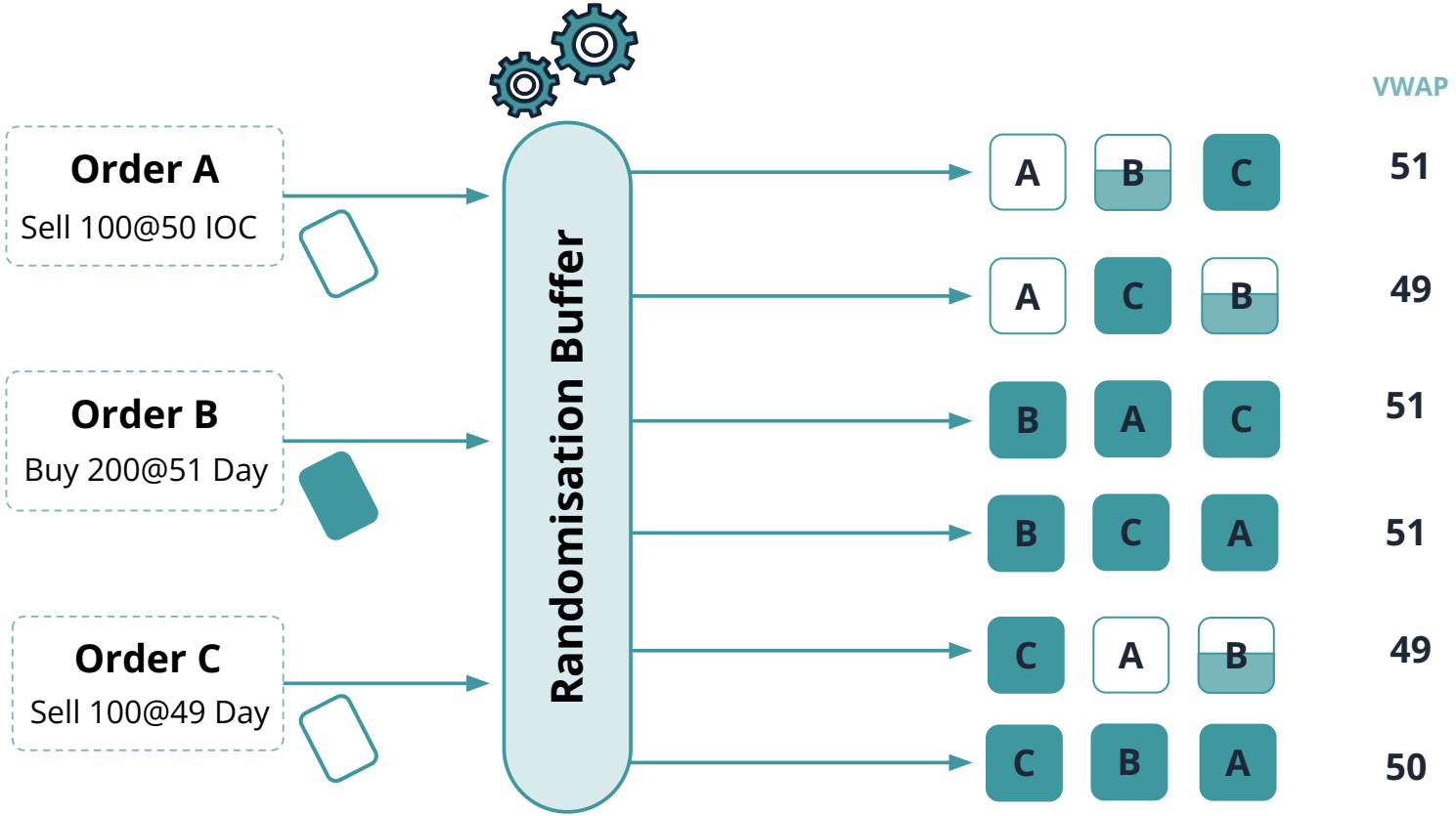



## Data Quality



## Interpretability

# Nondeterminism was always there



# Data Quality and Complexity

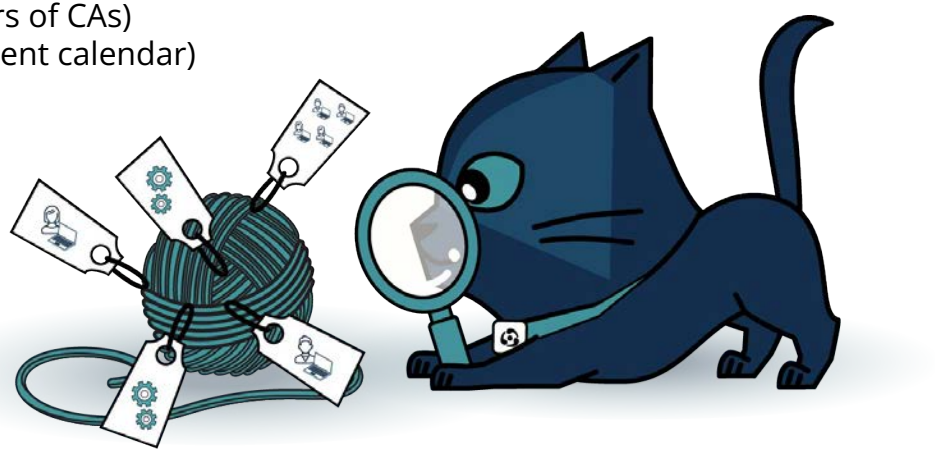
## TYPICAL QUALITY ISSUES RELATING TO THE DATA IN A DATASET

- ☑ Wrong data
- ☑ Incomplete data
- ☑ Mislabelled data
- ☑ Insufficient data
- ☑ Data not pre-processed
- ☑ Obsolete data
- ☑ Unbalanced data
- ☑ Unfair data
- ☑ Duplicate data
- ☑ Irrelevant data
- ☑ Privacy issues
- ☑ Security issues

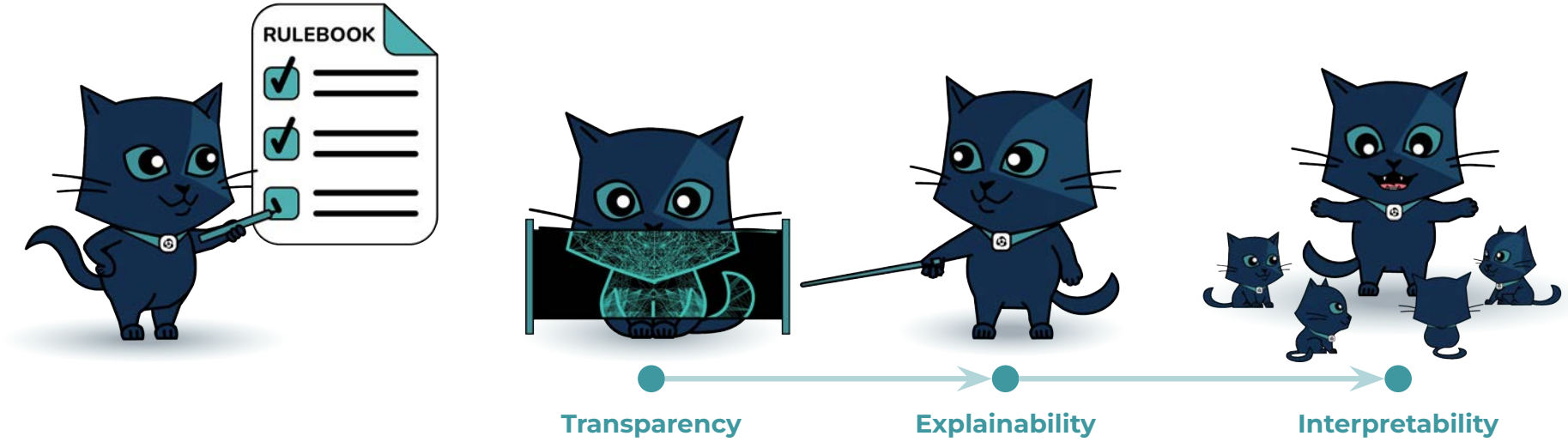
# Typical Reference Data in Clearing

**Reference data objects**

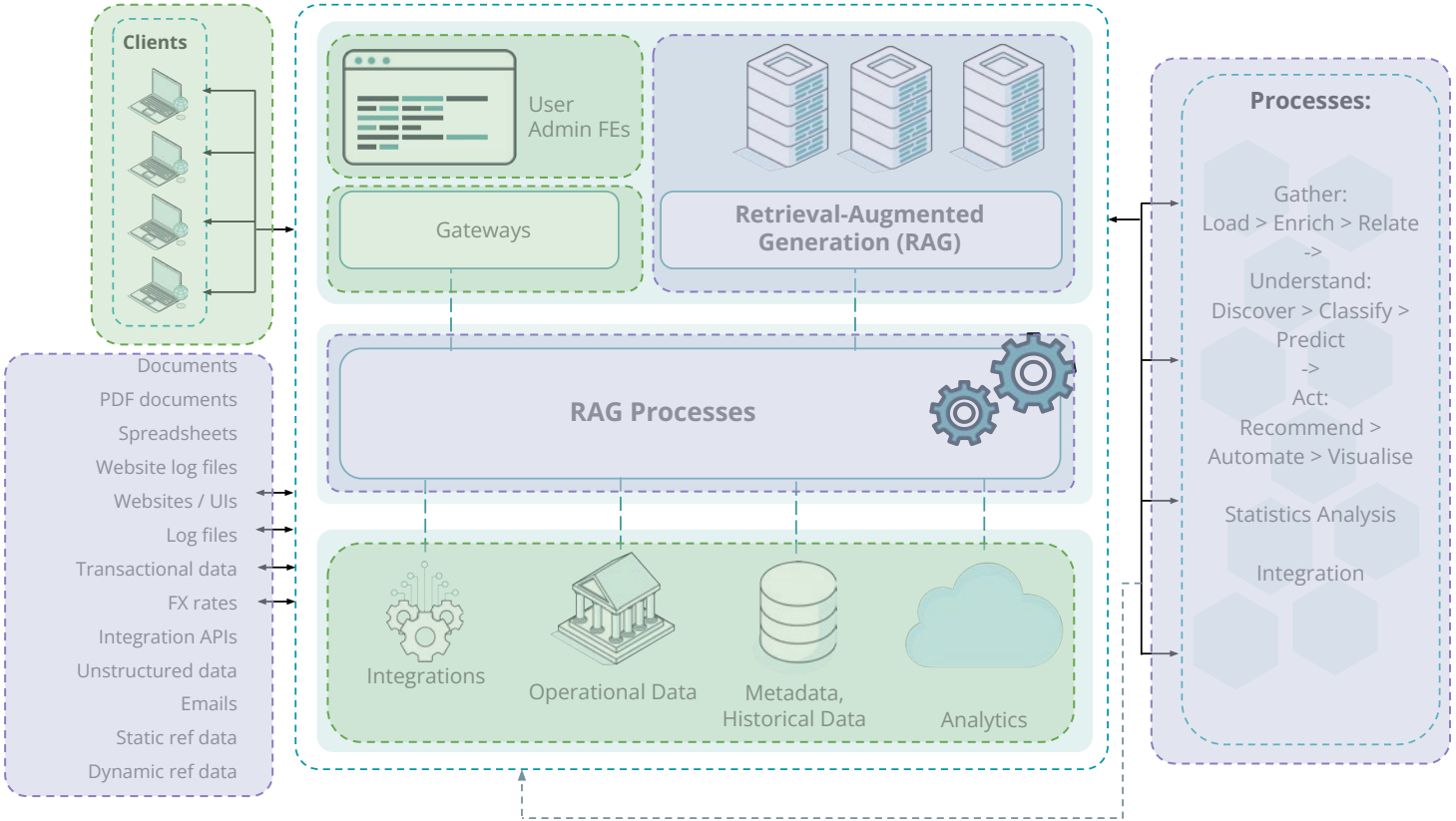
- **Participant and account structure** (position accounts, clearing account, margin accounts, collateral accounts, cash accounts).
- **Instruments** (for derivatives markets – tradable instruments and their contract specs (templates), underlyings)
- **Corporate Action Diary** (describes parameters of CAs)
- **Calendars** (CCP calendar, CSD calendar, Payment calendar) and schedule setup.
- **Risk parameters setup**
- **Fees setup**
- **Position management rules setup**
- **Settlement rules setup**
- Other (general) **system parameters**



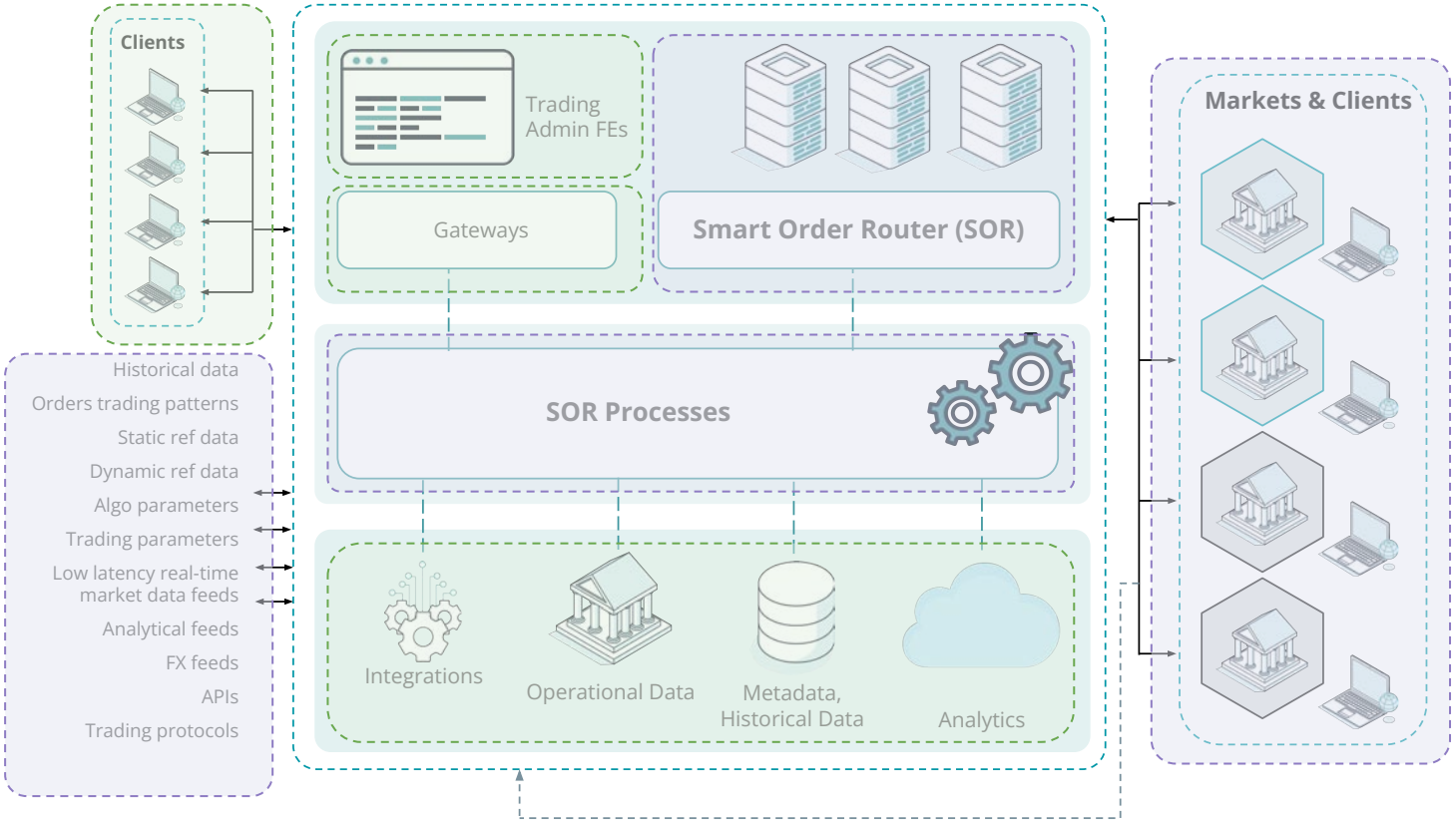
# Compliance process was never trivial



# RAG Processes - interact with AI



# SOR Processes - interact with AI and NI



# Human Intelligence and Software

## Types of Data

**Hand-Crafted**
Natural
Interactive
Attended
Manual

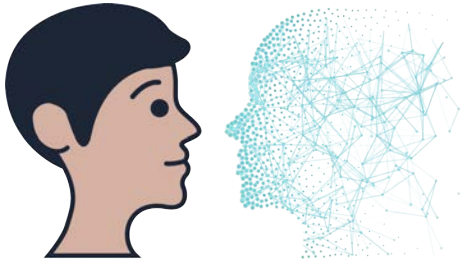
**Synthetic**
Artificial
Generated
Unattended
Automated

## Volumes of Data

Artifacts or Snippets
Narrow Bandwidth
Human-Attended Work

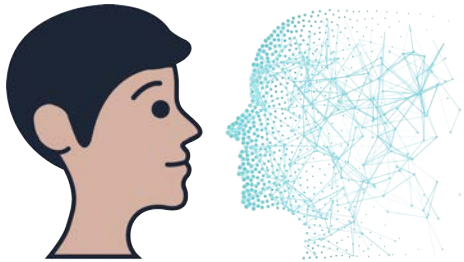
Datasets of Corpus
Machine Scale Big Data

## Human Intelligence and Software



# Human Intelligence and Software

**Intelligence** is the capability to acquire, process, and apply knowledge and skills.



**Humans:**

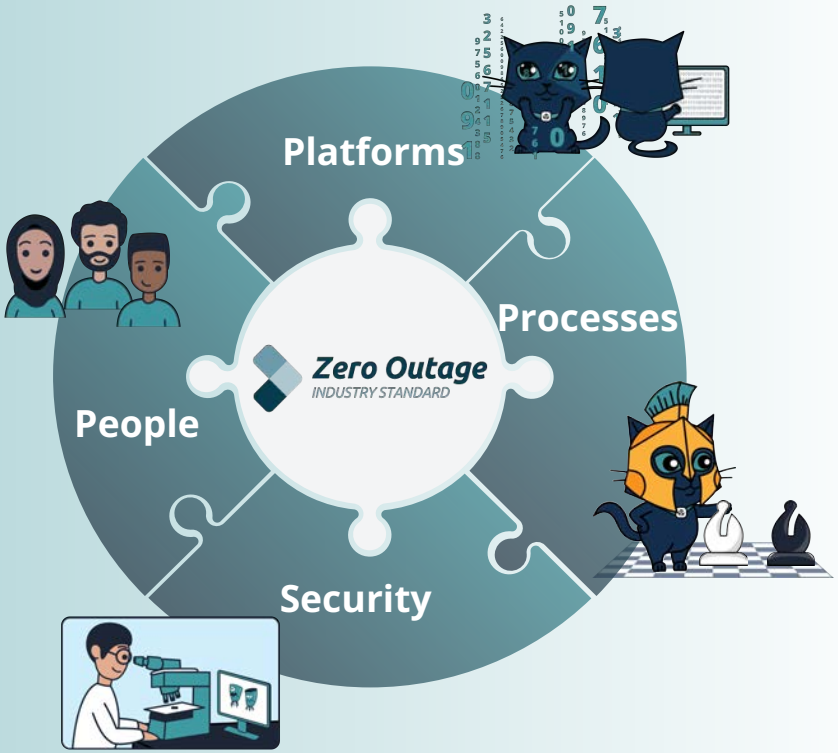
- Humans have intelligence - though we do not yet know what it truly is.
- They interact with reality through **skills**.
- They hold **knowledge** in their minds, in the form of **ideas**.
- They can learn, generalize, isolate, and abstract.
- They can convert **ideas** ↔ **artifacts** in a continuous cycle.
- Their interactions with reality and with artifacts serve as a **proxy** for understanding human intelligence.

**Software:**

- Running software executes a set of **instructions**.
- It can process data and produce **synthetic artifacts**.
- It interacts with reality through data flows and control loops defined in its instructions.
- Its interactions with reality can be represented as **data**.
- **Artificial intelligence** is software capable of acquiring, processing, and applying knowledge and skills.
- Software does not possess knowledge or skills - it only holds data to simulate them.
- **Synthetic artifacts** provide a **proxy** for exploring artificial intelligence.

# AI Adoption in Organisations

- **Build a strong foundation for an AI-ready environment:** embed pervasive internal AI literacy, start training all business and technical staff now.
- **Prepare to drive holistic change**: platforms will be just one of the components, factor in upcoming changes in supporting workflows and processes, security, and people.
- **Start small but plan big**: launch pilots in high-impact, low-risk areas.
- **Set up governance early**: developing ethics, testing, security, and compliance principles and frameworks should not be afterthoughts.




Zero Outage Industry Standard

# AI Testing Centre of Excellence

AI adoption comes with risks and challenges. A complex and far-reaching task, **AI implementation in financial services requires**:

- across-the-board transformations starting from cultural and structural changes
- data handling and data quality governance competencies
- ethics and bias literacy
- specialised quality assessment and test strategy expertise
- cutting-edge technology skills for model development and deployment

**Educating your teams now is vital to the success of your AI integration. To address current capacity gaps, we help our clients to build their own AI Testing Centres of Excellence.**

# Collaboration Opportunities

Collaboration with Exactpro enables organisations to:

- Understand the AI momentum.
- Focus not just on the present, but look into the future.
- Build a solid foundation in **AI Testing** to propel innovation across all business lines.

**Pilot Engagement**

Select a relevant system and run a time-boxed proof-of-concept (PoC) engagement to explore its functionality and available artifacts, assess the applicability of AI-enabled tools, assemble a prototype test harness, experiment with the test design.

**Test Strategy Development**

Design a comprehensive test strategy – incorporating AI-enabled test frameworks – tailored for a particular system (or your entire organisation infrastructure), define a structured testing framework aligned with recommended practices, build software to test software.

**Extensible Collaboration**

Participate in interactive workshops to obtain expertise in AI Testing via hands-on training sessions covering methodologies and tools. Foster knowledge exchange and skill development within the team. Extend productive collaboration. Build a **Centre of Excellence** in **AI Testing.**

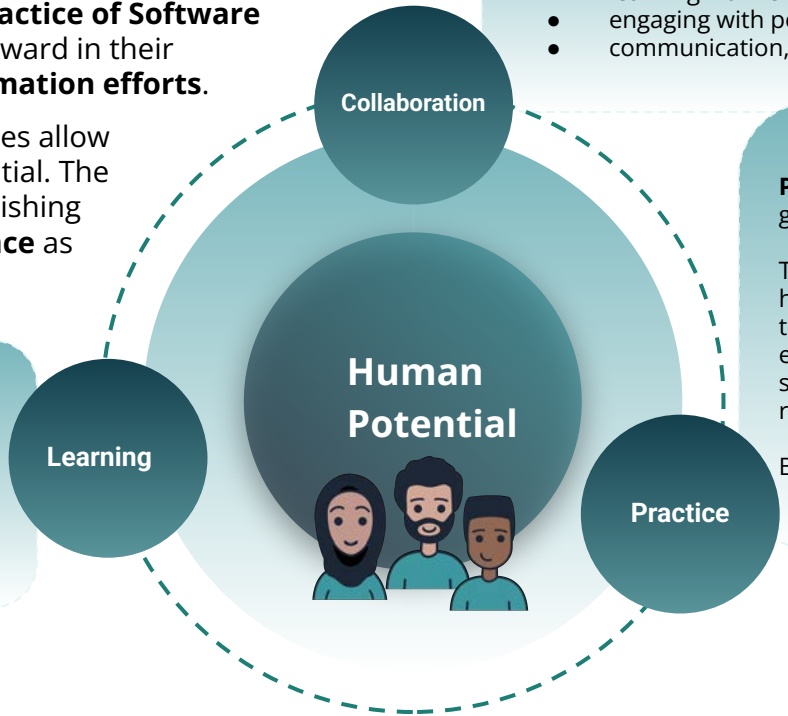
# AI Literacy & skill building
## Extensible collaboration

**Software Testing is Relentless Learning**. Much like every software exploration yields a new, much better understanding of the system under test, advancing knowledge and practical skills through learning a **Deliberate Practice of Software Testing** propels organisations forward in their overall **innovation** and **transformation efforts**.

The versatile learning opportunities allow firms to boost their human potential. The collaboration may result in establishing an **AI Testing Centre of Excellence** as the step towards AI integration.

Knowledge sharing among the team through hands-on **workshops**:

- personal and professional growth
- new skills, knowledge, or perspectives
- a hands-on, interactive environment
- learning from experts
- engaging with peers
- communication, engagement with like-minded people




**Practice** helps foster individual creativity and growth:

To really understand how a wheel is made, one has to reinvent the wheel. Getting to reinvent technology/tools that are at your disposal enables a deep understanding of their internal structure. It empowers their informed and responsible application as well as innovation.

Build Software to Test Software

**Training courses**: developing specialised courses

- Knowledge Transition courses for the specific project/goal
- Software testing basics
- AI Literacy and AI Testing

https://exactpro.com/training

# Book coverage

## PART 1 – INTRODUCTION TO AI AND AI-BASED SYSTEMS

Chapter 1.
Introduction to AI

Chapter 2.
Quality Characteristics for AI-Based Systems

## PART 2 – MACHINE LEARNING

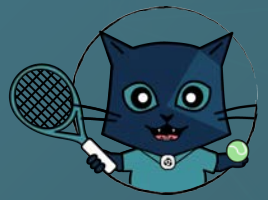
Chapter 3.
Machine Learning (ML) – Overview

Chapter 4.
ML - Data

Chapter 5.
ML Functional Performance Metrics

Chapter 6.
ML - Neural Networks and Testing

## PART 3 – TESTING AI-BASED SYSTEMS



Chapter 7.
Testing AI-Based Systems. Overview

Chapter 8.
Testing AI-Specific Quality Characteristics

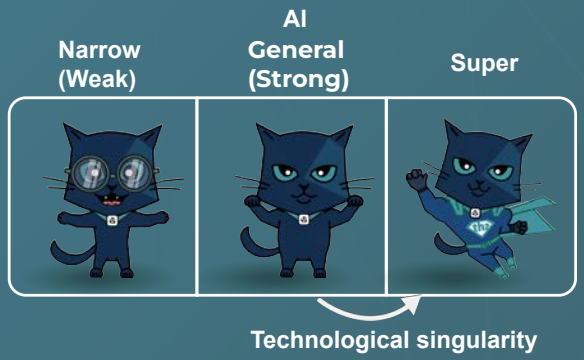
Chapter 9.
Methods and Techniques for the Testing of AI-Based Systems

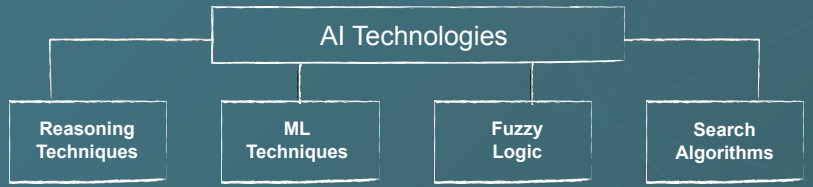
Chapter 10.
Test Environments for AI-Based Systems

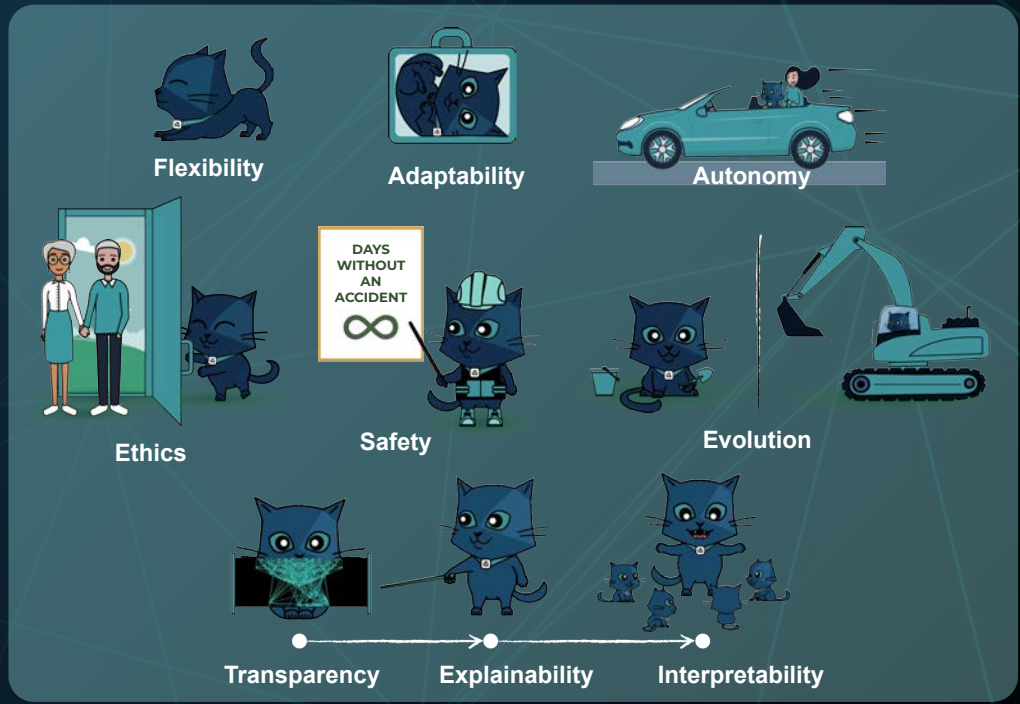
## PART 4 – TESTING WITH AI

Chapter 11.
Using AI for Testing

# Introduction to AI and AI-based systems
## Part 1



# Regulations & Standards
## Part 1

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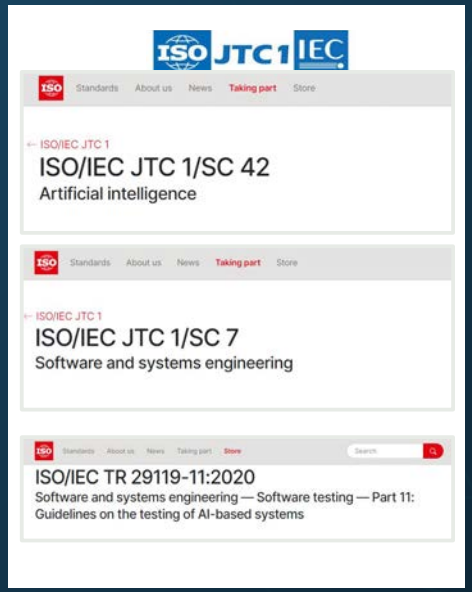
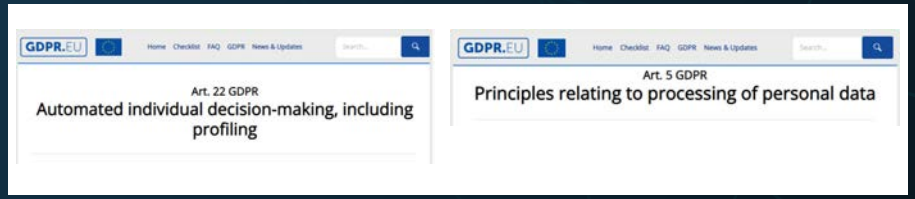


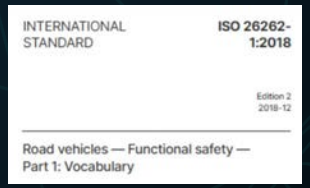


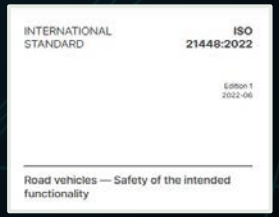






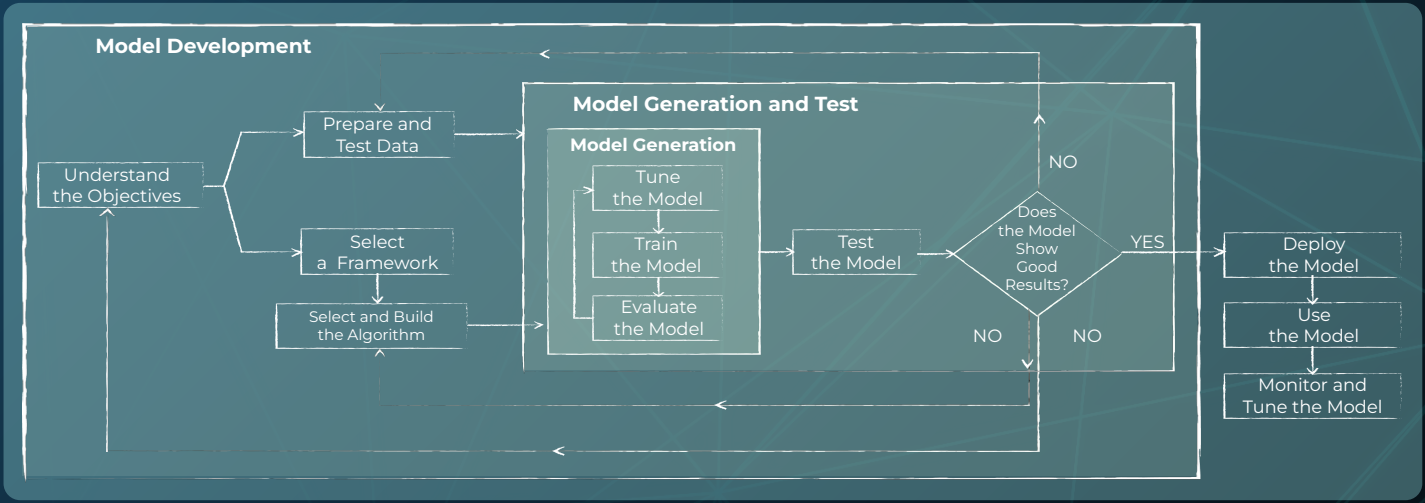


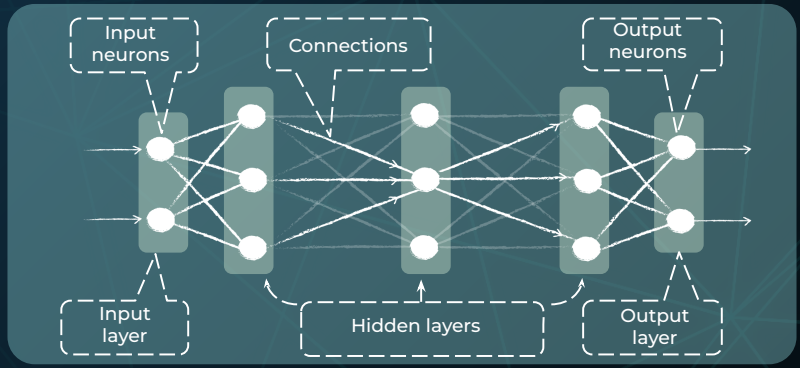



# Machine Learning and Data Processing

## Part 2



# Testing AI-based systems
## Part 3

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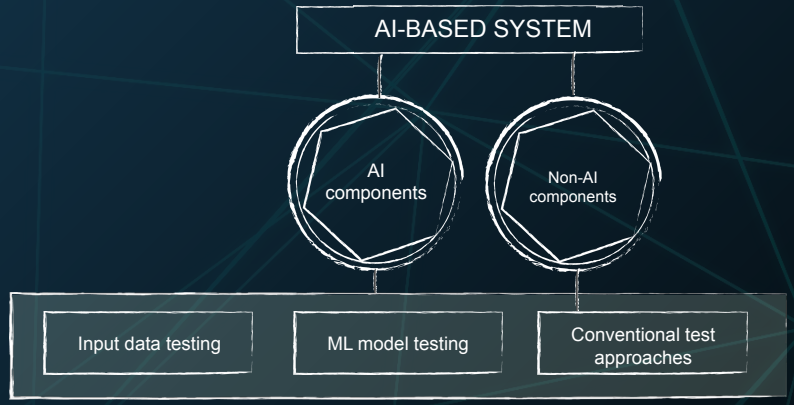
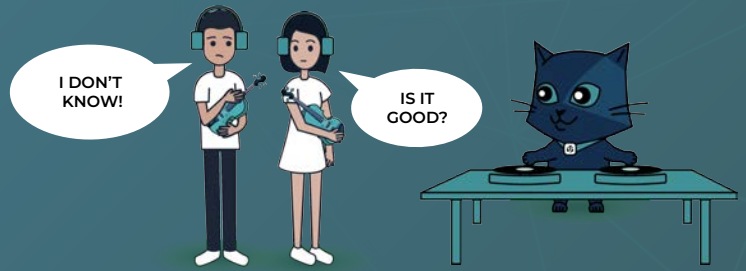
**Prototype**

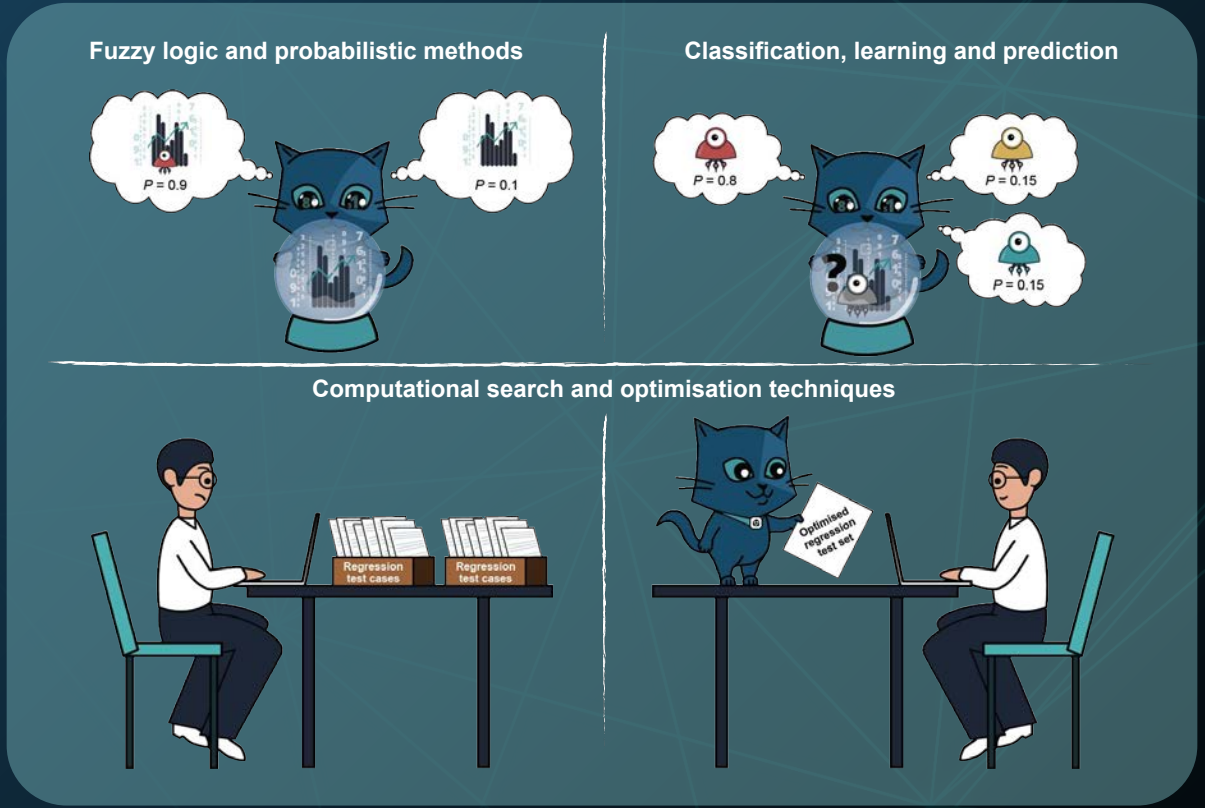
**Fully engineered version**




**Complex acceptance criteria**



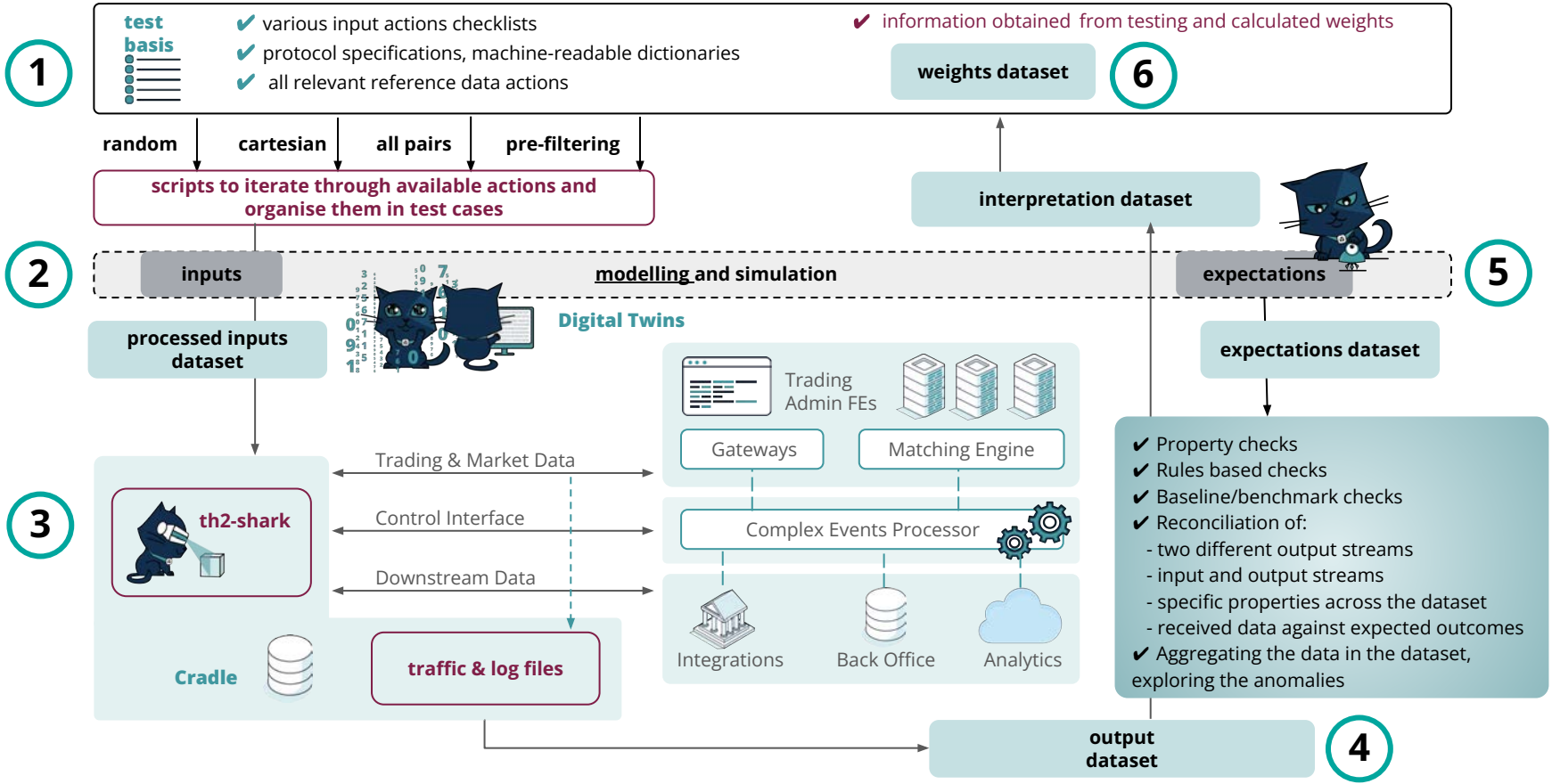

# Testing with AI
## Part 4



# Case Study Illustrating the AI Testing Approach


https://exactpro.com/case-study/trading-systems/ai-enabled-software-testing-artex-mtf

# Testing with AI



# Thank you

***I endorse this book as a valuable companion to the ISTQB® CT-AI certification and as a resource for those seeking to build responsible, robust, and intelligent systems. I trust it will inspire and equip the next generation of AI-aware testers across the globe.***

Foreword by Dr. Klaudia Dussa-Zieger, President of ISTQB®, Head of the ISTQB® AI Taskforce

***It's clear this book was written by professionals with real-world experience testing complex systems in high-stakes industries.***

Sophie Lafont, Consultant in Software Regulatory Compliance, Financial Services Industry

***Without a doubt, an essential bedside book for the new generation of QA-ers, and for the older ones that want to keep abreast with progress.***

Olivier Denoo, Vice-President of the ISTQB® and President of CFTL, Vice-president of ps_testware SAS

***With its methodical approach to AI testing, this book fills a critical gap for engineering leaders navigating AI risk.***

Sri Kolagani, Senior Engineering Manager, Elastic