

Introduction to SPICE4AI WG

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Agenda

- Context and motivation
- AI in development
- AI in Products
- SPICE4AI
- Discussion

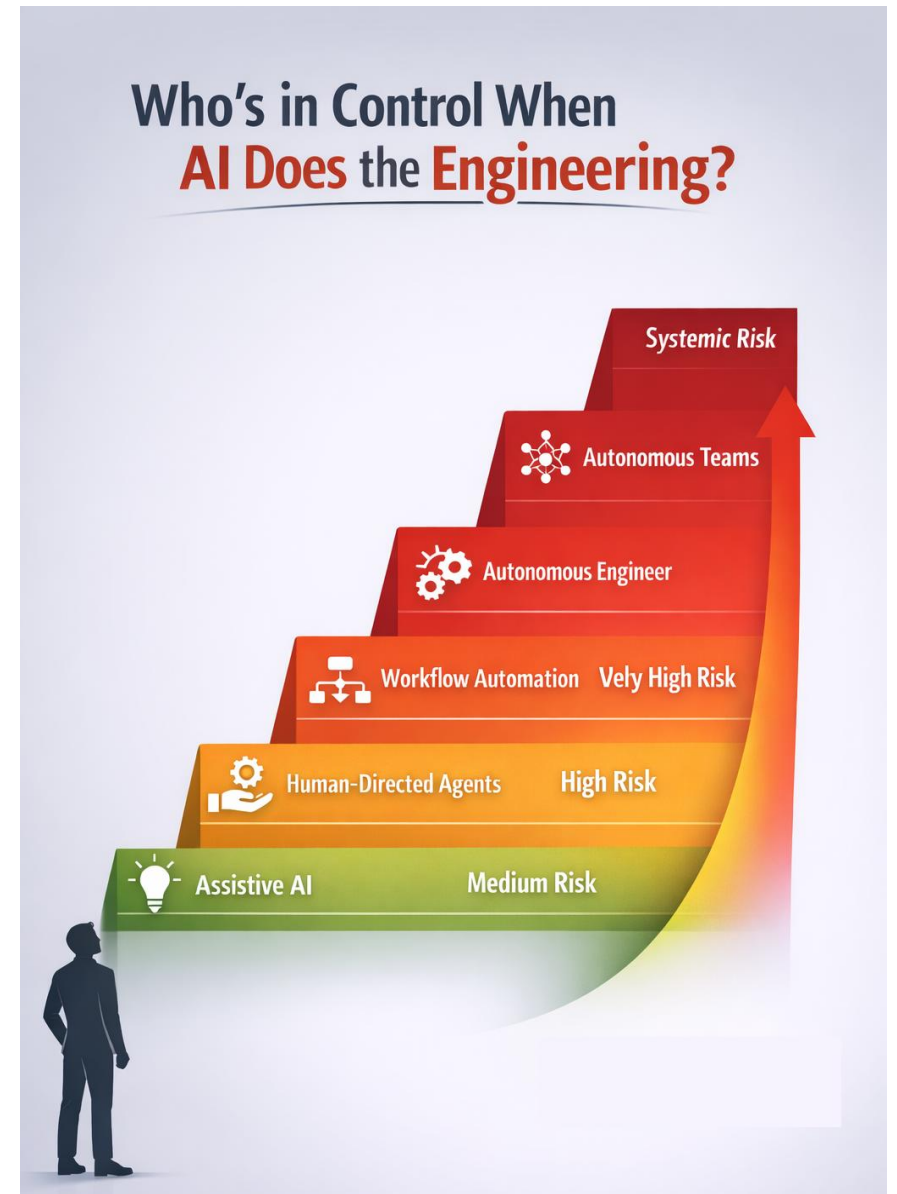


Context

- AI usage in development is expanding faster than process governance
- Current process frameworks and assessment models **assume**:
 - Human-driven development
 - Linear workflows
 - Deterministic tools

→ Increasing **AI autonomy** challenges these **assumptions**
- AI-enabled products are already part of ASPICE assessments

→ Assessment practice is adapting while frameworks remain unchanged



AI in Development – Assistance

AI Role

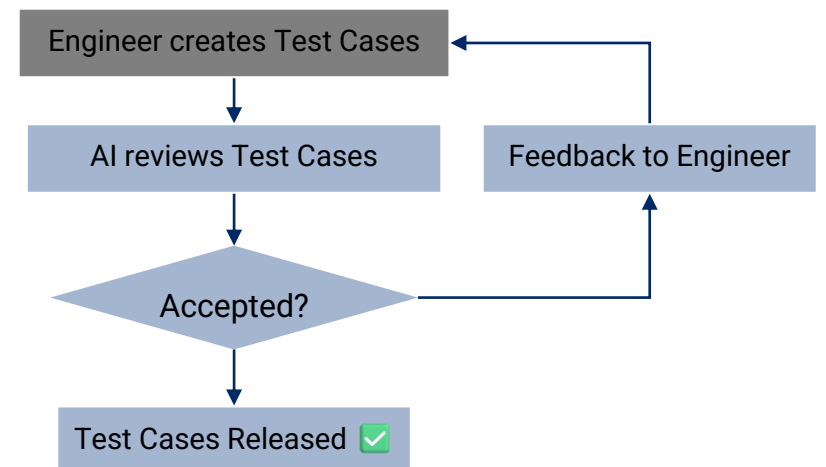
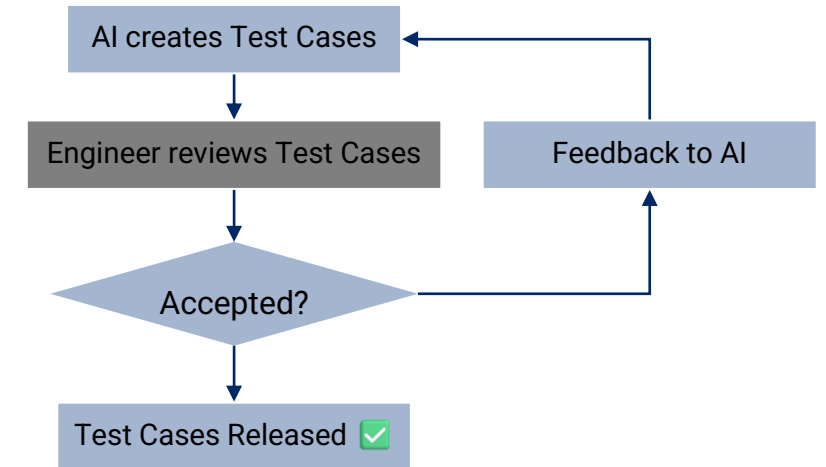
- AI suggests code, requirements, tests, or reviews
- Engineers decide what to accept or reject
- AI has no execution authority

Risk Shift

- Productivity increases
- Volume of output increases
- Risk of over-reliance
- Control and responsibility remain human.

Autonomy Level → (1) Assistive AI

- AI supports decisions, but never directs them.



AI in Development– Delegation

AI Role

- Engineers delegate tasks to AI agents
- Agents perform multi-step actions autonomously
- Humans review results, not execution steps

Risk Shift

- Reduced transparency of how results were produced
- Authorship becomes blurred
- Reviews increasingly outcome-focused
- Decision authority remains human, but execution autonomy increases.

Autonomy Level → (2) Directed Agents

- Humans set goals; AI determines how to achieve them.



AI in Development – Automation

AI Role

- AI orchestrates development flows
- AI triggers reviews, baselines, handovers
- Engineers supervise checkpoints

Risk Shift

- Process steps become implicit
- Rationale is embedded in workflows
- Traceability is reconstructed after the fact
- Control shifts from activity execution to system supervision.

Autonomy Level → (3) Automated Workflows

- AI controls process sequencing, humans monitor outcomes.

Copilot requested your review on this pull request.

Switch weather API for the widget feature #19

Draft Copilot wants to merge 2 commits into `main` from `copilot/fix-18`

Conversation 4 Commits 2 Checks 0 Files changed 3

Copilot AI commented 2 weeks ago · edited

This PR switches the weather API used in the widget feature.

The changes include:

GitHub Copilot

> Used 2 references

Run command in terminal

```
npm run lint -- widget.js
```

Linting the code in widget.js using the project's lint script.

Continue

Cancel

AI in Development – Autonomy

AI Role

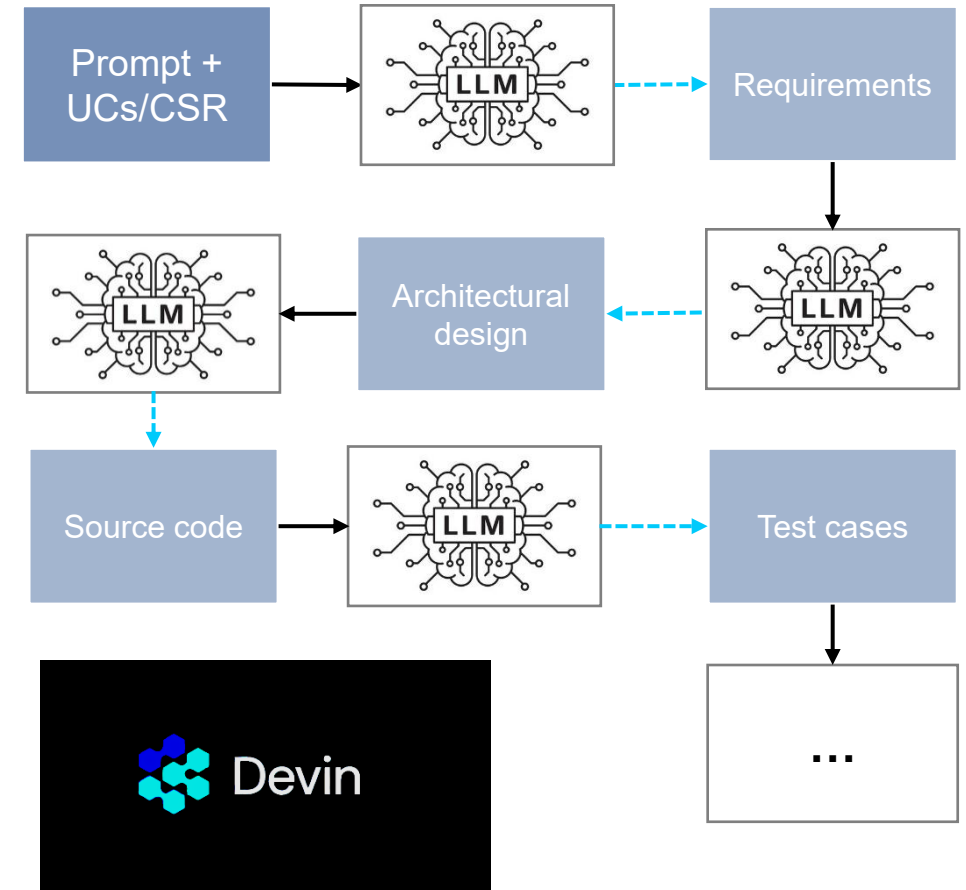
- AI independently designs, implements, and verifies
- Human role is largely review or acceptance
- AI makes engineering trade-offs

Risk Shift

- Decisions may not be explainable
- Human approval becomes ceremonial
- Accountability becomes abstract
- Human understanding no longer equals human control.

Autonomy Level → (4) Autonomous Engineering

- AI holds primary engineering decision authority.



AI in Development – Self-Organization

AI Role

- Multiple AI agents play engineering roles
- AI reviews AI
- System self-optimizes over time

Risk Shift

- Decisions are emergent
- No single accountable actor
- Independence of review collapses
- Assurance must target system behavior, not individual actions.

Autonomy Level → (5) Autonomous Teams

- Engineering becomes a self-organizing system.



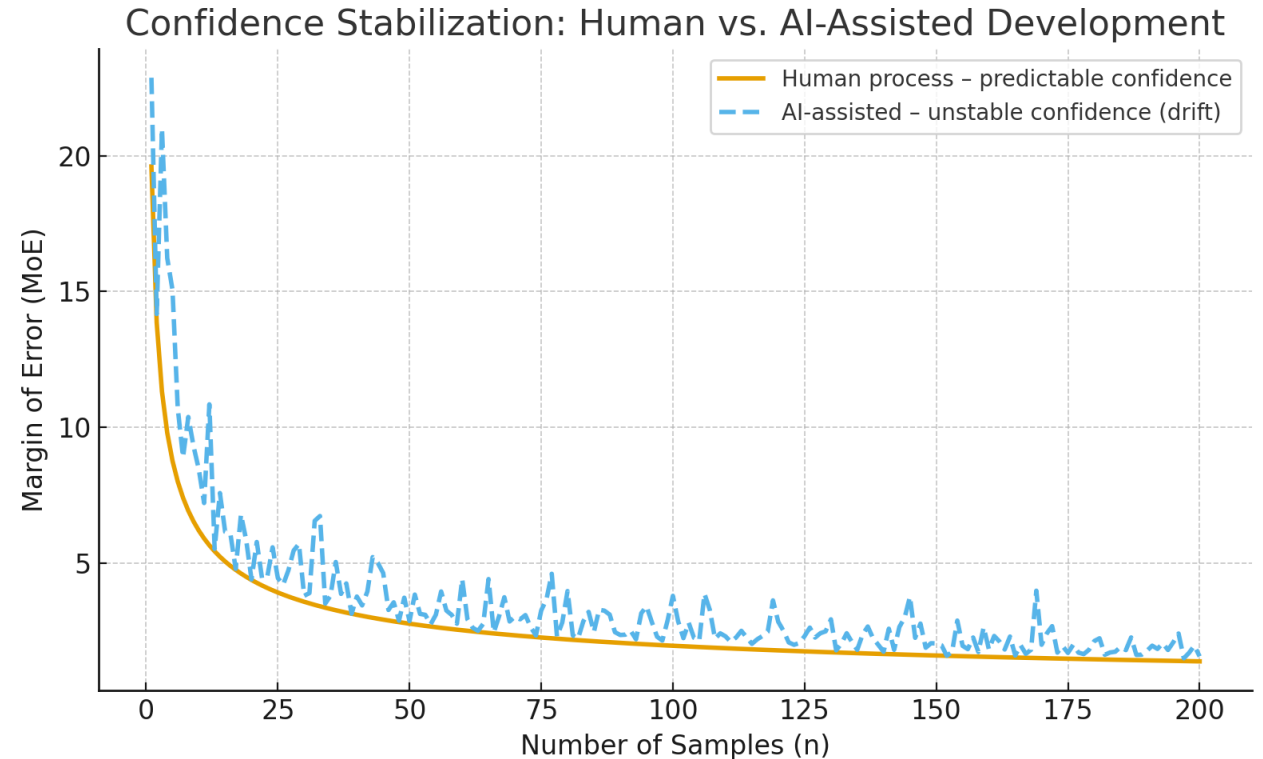
AI in Development – Assessment Implications

Evidence Characteristics

- Evidence is generated repeatedly
- Results may vary across executions
- Traceability requires reconstruction

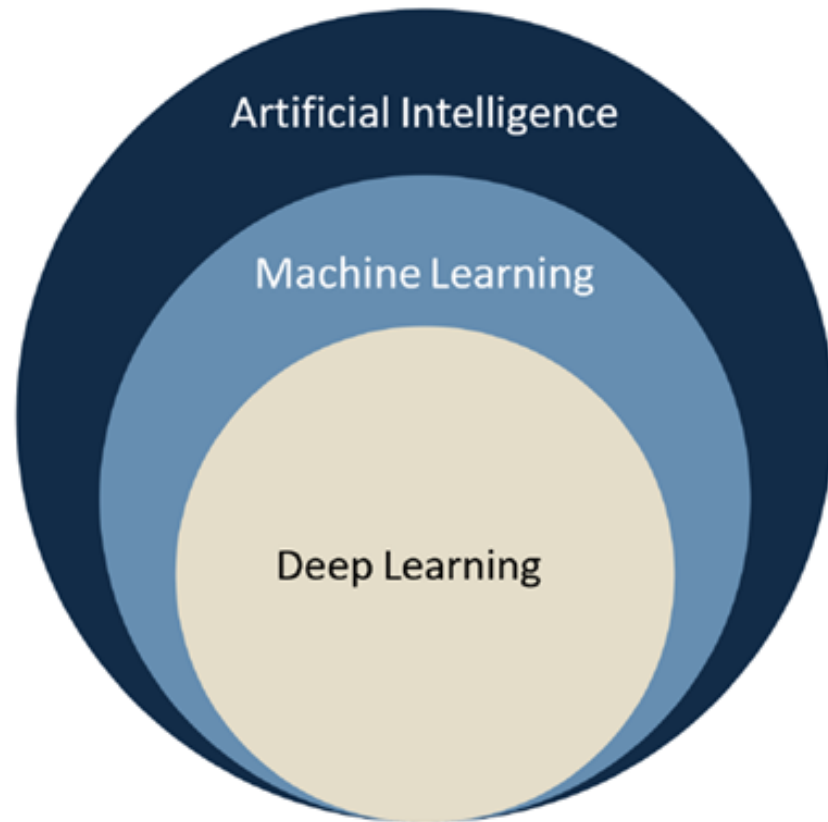
Implications

- Sampling assumptions change
- Confidence becomes time-dependent
- Interpretation effort increases



*“With AI-augmented development, every run is effectively a new version.
Sampling logic for classical software no longer builds confidence.
That is why two assessors can both be correct and still disagree.”*

AI in Products



Artificial Intelligence enables machines to mimic human behaviour

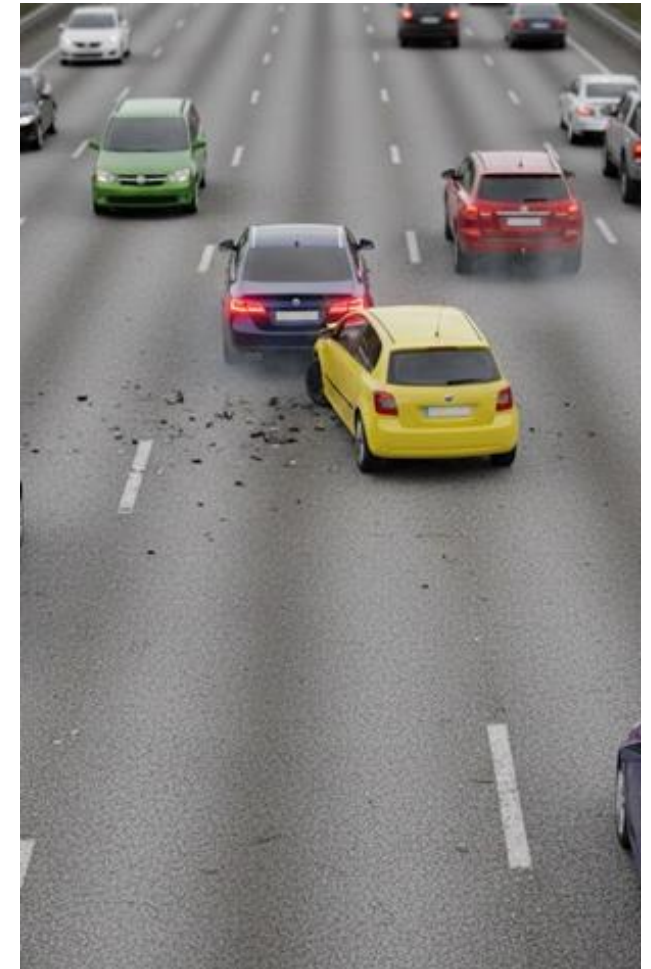
Machine Learning (ML) describes the ability of software to learn from specific training data and to apply this knowledge to other similar tasks.

Deep Learning (DL) is a method of machine learning which uses multilayer neural networks to build complex structures of artificial intelligence.

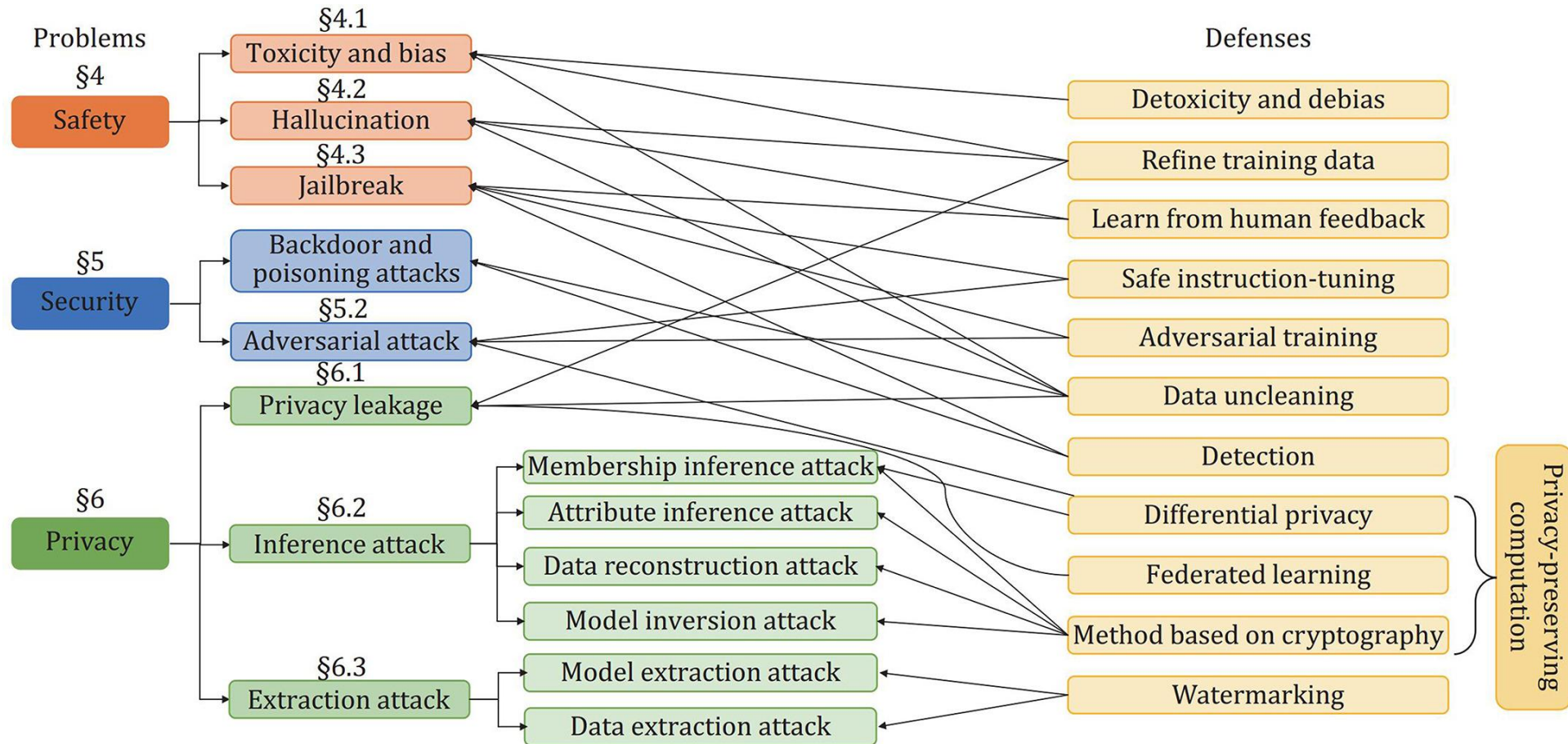
This is just one of many classifications!

AI in Products

Aspect	Machine Learning (ML)	Artificial Intelligence (AI)
Perception	<ul style="list-style-type: none"> Detect lanes Detect vehicles Detect pedestrians Classify signs 	<ul style="list-style-type: none"> Detect lanes Detect vehicles Detect pedestrians Classify signs
Prediction	Brake probability = 80%	Brake probability = 80%
Reasoning		<ul style="list-style-type: none"> Evaluate multiple options Filter illegal/unsafe options
Planning		<ul style="list-style-type: none"> Select trajectory Optimize comfort/safety
Decision		Brake, steer
Control		Maintain gap

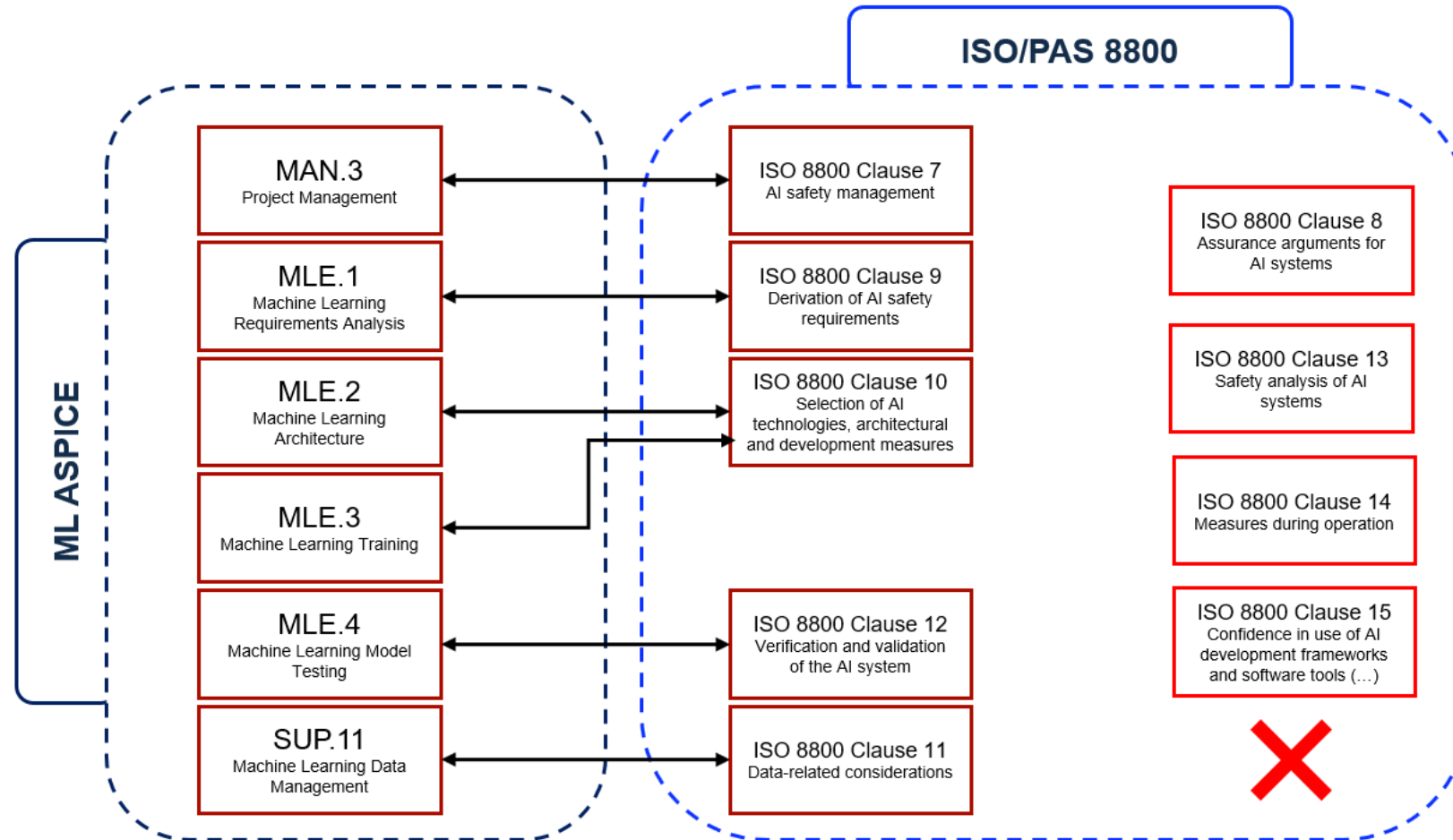


AI in Products – Current Challenges



R. Zhang et al, On large language models safety, security, and privacy: A survey, 2025

AI in Products – Current Challenges



* ISO 8800 Clause 11 is also covered by Data Management SPICE

SPICE4AI

Purpose

- Address assessability of AI in development
- Clarify assessment domains for AI-enabled products
- Support consistent assessment practice

Scope

- AI-based development activities
- AI-enabled products
- Lifecycle-wide assessment considerations

Position

- Aligned with ASPICE assessment logic
- Not a replacement or extension

Members		
Stephan Müller	Marcel Wettlaufer	Ronald Melster
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Jürgen Müller	Carlo Donzella	Fabio Bella

SPICE4AI – Deliverables (2026)

AI-Augmented Development	AI-Enabled Products
Assessment Guidelines	MLE Training material
Use Case Library	Product Use Case Library
White Papers	White Papers



DO YOU HAVE ANY QUESTIONS?

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Revision History

Version	Date	Status	Author	Comment
0.1	18.05.2026	Draft	Yasser Elzant	Draft
1	19.05.2026	Released	Yasser Elzant	First release

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