The Laws of Authority

A Beyond Purdue statement on machines, people and AI | V1.0 | 3 November 2026 | Petr Roupec, BM Global

Purdue sorts devices by where they sit. Beyond Purdue sorts them by what they are allowed to do.

Asimov gave his robots three laws in 1942. Our plants need the same for machines, people and AI. The simpler and more predictable a level, the more authority it holds: authority is earned by predictability, not by intelligence. People work inside the plant. Their safety is designed in from the start, not added later.

Level	Authority	Allowed to vote on	Never allowed to	Standards
L0 Protection and isolation	**Absolute**	Trip. Veto over every level. Hold the lock.	Be overridden, or depend on any other level.	IEC 61508, IEC 61511, IEC 62061 / ISO 13849, IEC 60255, API 670, ISO 14118
L1 Controller	**Acts**	Actuators, within its logic and protection limits. Shouts every command it executes.	Act outside protection limits.	IEC 61131-3
L2 Channels	**Gatekeeper**	What crosses, and in which direction. Every level speaks only through L2. Out channels carry data and records out; in channels carry commands in.	Originate a command. Mix data and commands.	Data diodes, passive by preference
L3 Data nodes	**Holds and serves**	Nothing. It processes, stores and presents data on demand. Holds the asset records and every command given and executed.	Grant access. Act on the plant. Pass a command.	DNS / DNSSEC (RFC 4033), OPC UA, MQTT or other open standards
L4 Operator	**Decides**	Commands to controllers, each one shouted to L3 as given. Override and stop of any advice.	Disable protection.	EU AI Act Article 14
L5 AI	**Voice, no vote**	Nothing. It analyzes, interprets and supports the operator.	Touch an actuator.	System One models (e.g. Jev)

Isolation keeps people safe at work: the lock holds a machine still while someone is inside it. The emergency stop stops a machine; only the lock keeps it stopped. [17][18]

AI has a voice, not a vote.

The laws

A lower-numbered law always overrides a higher one, as in Asimov.

Meta-law. No level acts outside these laws. [2]

Law Zero. Protection. No harm to people or the environment, by action or inaction. Nothing is allowed to weaken protection. A lock outranks every level. [1][3][4][17]

First Law. Independence. If every level above fails, protection still acts. [5][9][10]

Second Law. Obedience. The controller obeys the operator, unless that breaks Law Zero or the First Law. [1][6][7]

Third Law. Self-preservation. The machine protects itself, but people come first. [1][8][9]

Fourth Law. The gate. Out channels carry data out, in channels carry commands in. They never mix and never originate an action. [15][19]

Fifth Law. The record. Data nodes process, store and present data on demand. They record every command, permit, lock and bypass. They grant no access and take no action. [11][12][16]

Sixth Law. The human decides. The operator can always ignore, override or stop any advice. [13]

Seventh Law. See everything, touch nothing. AI analyzes, interprets and supports. It reaches an actuator only through a human decision. [14][15]

Eighth Law. Authority flows down only. Information rises, authority descends. Failure never grants authority. [15]

What follows from the laws. Data lives in independent nodes, each with its own name and meaning. Names are DNS style, with aliases, updated automatically, by a person or by a shout. Every node has at least two copies. The data diode is the enabler: light travels one way, so data and commands never mix. [19][20]

Enforced by construction, not by programming. Copper for protection, light and direction for channels, signatures for names. A law that lives only in software is a wish.

Purdue sorts devices by where they sit. Beyond Purdue sorts them by what they are allowed to do.

References

1. Asimov, Three Laws of Robotics and the Zeroth Law: https://en.wikipedia.org/wiki/Zeroth_Law_of_Robotics
2. Clarke, Asimov's laws of robotics: implications for information technology (meta-law): https://cse.buffalo.edu/~rapaport/Papers/Papers.by.Others/clarke-asimov-2.pdf
3. IEC 61508, Functional safety of E/E/PE safety-related systems: https://webstore.iec.ch/en/publication/5515
4. IEC 61511-1, Safety instrumented systems for the process industry sector: https://webstore.iec.ch/en/publication/24241
5. IS/IEC 61511-1, clause 11.2.4, separation and independence of BPCS and SIS: https://law.resource.org/pub/in/bis/S05/is.iec.61511.1.2003.pdf
6. IEC 62061, Safety of machinery, functional safety of safety-related control systems: https://webstore.iec.ch/en/iec_catalog/product/preview/?id=L3B1Yi9wZGYvcHJldmlldy9pbmZvX2llYzYyMDYxe2VkMi4yfWVuLnBkZg==
7. ISO 13849-1, Safety-related parts of control systems: https://www.iso.org/standard/69883.html
8. IEC 60255-1, Measuring relays and protection equipment: https://cdn.standards.iteh.ai/samples/100210/08c2059a2d7f406f8290ee090e93b0ee/IEC-60255-1-2022.pdf
9. API 670, Machinery Protection Systems: https://www.intertekinform.com/en-us/standards/api-std-670-2025-97086_saig_api_api_3641258/
10. Munich Re, Steam turbine overspeed protection (API 670 separation of overspeed from speed control): https://www.munichre.com/content/dam/munichre/contentlounge/website-pieces/documents/Overspeed_Protection_White_Paper_BRO-FINAL.pdf/_jcr_content/renditions/original./Overspeed_Protection_White_Paper_BRO-FINAL.pdf
11. OPC Foundation, OPC UA specifications: https://reference.opcfoundation.org/
12. RFC 4033, DNS Security Introduction and Requirements: https://www.rfc-editor.org/rfc/inline-errata/rfc4033.html
13. EU AI Act, Article 14, Human oversight: https://ai-act-service-desk.ec.europa.eu/en/ai-act/article-14
14. TypeSafe AI, Introducing System One Models and Jev: https://typesafe.ai/blog/introducing-system-one-models-and-jev
15. Beyond Purdue newsletter: https://www.beyondpurdue.com/
16. OASIS, MQTT Version 5.0: https://docs.oasis-open.org/mqtt/mqtt/v5.0/mqtt-v5.0.html
17. ISO 14118, Safety of machinery, prevention of unexpected start-up: https://www.iso.org/standard/66460.html
18. ISO 13850, Safety of machinery, emergency stop function: https://www.iso.org/standard/59970.html
19. NIST glossary, data diode: https://csrc.nist.gov/glossary/term/data_diode
20. RFC 1034, Domain names, CNAME aliases: https://www.rfc-editor.org/rfc/rfc1034