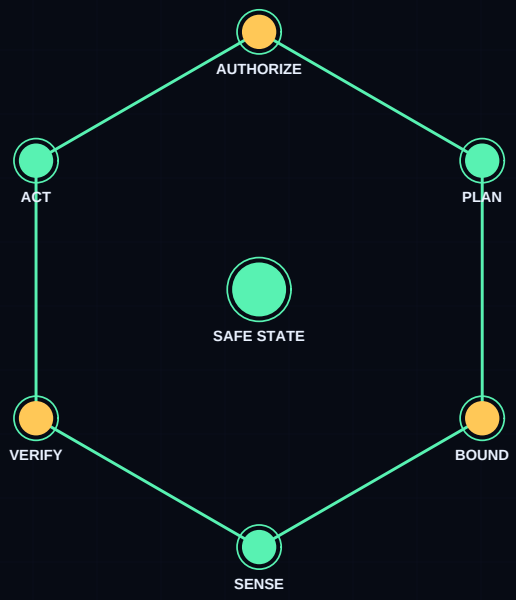
MYTHOS SYSTEMS / ENGINEERING STANDARDS LIBRARY

ROBOTICS & AUTONOMOUS SYSTEMS

Robotics System Safety, Security, and Lifecycle Standard



PERMANENT DOCUMENT ID

MYTHOS-ROB-0001

STATUS

Candidate Standard

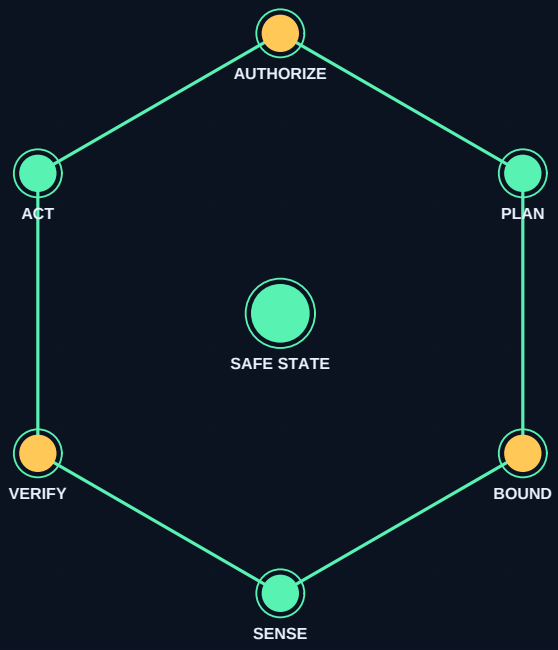
VERSION

1.0.0-candidate

MYTHOS-ROB-0001 / VISUAL OPERATING MODEL

Architecture & Assurance Map

A compact reasoning model for implementation, assessment, and evidence review.



OPERATING POSITION

Physical AI must remain bounded by safety, authority, uncertainty, and recoverability.

EVIDENCE PATH

sense -> interpret -> plan -> authorize -> act -> observe -> recover

READINESS SIGNALS

hazard controls, human override, perception confidence, geofence, fail-safe state

PERMANENT PUBLICATION IDENTITY

Robotics System Safety, Security, and Lifecycle Standard

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MYTHOS-ROB-0001

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Mythos Systems

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2026-07-24

SCHEDULED REVIEW
2027-01-24

CLASSIFICATION
Public

18	6	4	1
ATOMIC CRITERIA	ASSURANCE VIEWS	IMPLEMENTATION PROFILES	PERMANENT IDENTITY

Publication doctrine. This publication establishes durable requirements for its defined scope. Interpretation must preserve the permanent document identity, required evidence, controlled exceptions, source currency, and formal revision history.

EMERGING TECHNOLOGY AND ASSURANCE TOPOLOGY

Robotics and Autonomous Systems

A trustworthy robotics system safety and security program is a governed path from research claim through baseline, experiment, safety and security challenge, transition decision, bounded operation, and preserved evidence.

CLASSIFY

Separate established practice, candidate standard, reproduced result, vendor claim, implementation hypothesis, and open research.

EXPERIMENT

Declare baseline, configuration, uncertainty, scenario coverage, stop conditions, and independent reproduction before conclusions.

CONSTRAIN

Identity, policy, safety envelopes, physical boundaries, cryptographic authority, and human intervention limit consequence.

TRANSITION

Adoption, pilot, production, rollback, supplier exit, lifecycle, and retirement decisions remain evidence-bearing and reversible.

EVIDENCE-BOUND TRANSITION FLOW

No novelty claim becomes an operational claim without reproduced evidence and an explicit authority decision

INTERPRETATION AND ASSURANCE

How to apply this publication

Normative intent

Requirements define outcomes and constraints. Implementations may vary, but evidence must demonstrate equivalent control.

Evidence over assertion

Vendor documentation and design intent are not equivalent to reproduced behavior. Record evidence grade and uncertainty.

Risk-proportional depth

Higher consequence, autonomy, sensitivity, and irreversibility require stronger isolation, review, verification, and recovery.

Controlled exception

Exceptions require an owner, rationale, compensating control, residual-risk acceptance, expiration, and reevaluation trigger.

Normalized assessment scale

0	1	2	3	4	5
ABSENT	AD HOC	PARTIAL	OPERATIONAL	ADVANCED	LEADING

A numeric score must never hide a failed mandatory gate, missing evidence, untested workload, or unacceptable residual risk.

INTERACTIVE NAVIGATION

Contents

Navigation doctrine

Bookmarks and internal links are conveniences. Permanent document identity, criterion identifiers, evidence references, and revision history remain authoritative.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

0. Executive Mandate

Research value, transition discipline, and non-negotiable evidence boundaries

MANDATE

Organizations evaluating robotics system safety and security MUST separate research from operational authority, establish a reproducible baseline, constrain safety and security consequence, disclose uncertainty, and require a documented transition or rejection decision.

Required outcomes

- Establish a durable, product-neutral evidence system for robotics system safety and security.
- Prevent novelty, investment, vendor prestige, roadmap language, or laboratory success from substituting for operational proof.
- Require representative performance, adversarial, failure, recovery, safety, privacy, and lifecycle evidence.
- Keep pilots bounded by identity, authority, environment, duration, budget, stop conditions, and rollback.
- Preserve rejected alternatives, limitations, residual risk, source currency, and reassessment triggers.

Decision boundary: conformance supports a bounded engineering assurance position. It does not prove scientific consensus, regulatory approval, universal safety, quantum advantage, cryptographic perfection, autonomous competence, or commercial viability.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

1. Scope and Applicability

Research, pilot, transition, operational, and retirement boundaries

IN SCOPE

- Research, architecture, acquisition, experiment, pilot, transition, operation, and retirement of robotics system safety and security.
- Hardware, software, models, data, protocols, facilities, people, suppliers, providers, physical processes, and evidence.
- Laboratory, simulation, testbed, shadow, pilot, canary, production, and field deployment states.
- Claims, benchmarks, uncertainty, safety, security, privacy, economics, interoperability, support, and exit.

OUT OF SCOPE

- Scientific truth inferred from a single benchmark, simulation, provider, hardware generation, or laboratory configuration.
- Safety, regulatory, export, spectrum, airspace, clinical, cryptographic, or standards approval not granted by the responsible authority.
- Roadmap forecasts, token price, patent counts, press releases, or investment treated as engineering evidence.
- Hidden production use of research components outside the declared transition and assurance boundary.

Applicability triggers

- The capability is novel, rapidly changing, weakly standardized, difficult to reproduce, or dependent on immature suppliers.
- A claim concerns safety, security, privacy, physical action, critical infrastructure, cryptographic trust, or consequential autonomy.
- The system requires specialized facilities, scarce hardware, spectrum, foundry, cryogenic, optical, robotics, or field-test dependencies.
- Failure or lock-in may create long-lived data, capital, infrastructure, workforce, or regulatory consequences.
- A research component is proposed for pilot, customer, production, public, or externally relied-upon use.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

2. Definitions and Taxonomy

Controlled language for architecture, governance, and assessment

AUTHORITY

The right to approve, deny, constrain, or execute an action. Model output is not authority.

EVIDENCE

A reproducible source, trace, measurement, test, record, signed artifact, or documented observation supporting a claim.

ASSURANCE VIEW

A defined perspective such as governance, architecture, security, operations, privacy, or human oversight.

ATOMIC CRITERION

A uniquely identified requirement that can be assessed, evidenced, excepted, and revised independently.

IMPLEMENTATION PROFILE

A risk-proportional set of required depth, evidence, and gates for a class of use.

CONTROLLED EXCEPTION

A time-bounded deviation with owner, rationale, compensating control, residual risk, expiration, and review trigger.

DETERMINISTIC MECHANISM

A component whose inputs, policy, state transition, and side effects can be constrained and verified.

SOURCE AUTHORITY

The documented basis for treating a source as reliable for a defined claim, context, jurisdiction, and time.

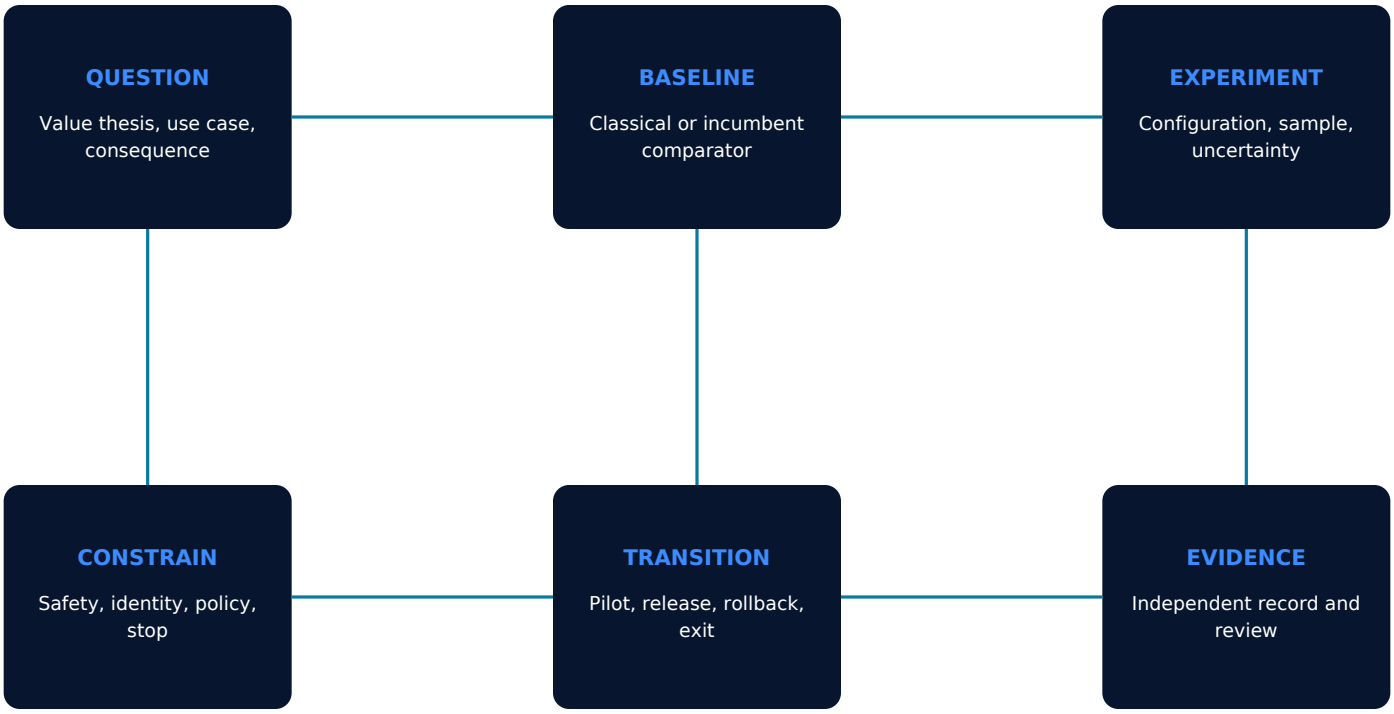
REASSESSMENT TRIGGER

A change, incident, drift signal, dependency revision, or time boundary requiring renewed evaluation.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

3. Architecture and Trust Model

Separation of research, authority, physical systems, runtime, and evidence



Mandatory trust boundaries

- Research systems MUST NOT inherit production identity, secrets, authority, data, networks, or physical control by convenience.
- Claims MUST retain the exact hardware, software, model, protocol, calibration, environment, workload, and observation boundary.
- Safety, cryptographic, physical, spectrum, autonomy, and human-intervention constraints MUST remain independently enforceable.
- Transition MUST have a named decision authority, acceptance criteria, monitored pilot, rollback, supplier exit, and retirement path.
- Evidence MUST remain reviewable when a vendor, cloud, token network, laboratory, model, robot, or quantum backend is unavailable.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

4. Governance and Accountability

Decision rights, separation of duties, and lifecycle ownership

ACCOUNTABLE OWNER

Accepts scope, risk tolerance, funding, and residual risk.

SYSTEM OWNER

Maintains architecture, inventory, operating boundaries, and change control.

SECURITY / PRIVACY

Defines threat, identity, data, isolation, monitoring, and incident requirements.

EVALUATION AUTHORITY

Designs representative tests, gates releases, and preserves reproducibility.

OPERATIONS

Maintains availability, rollback, recovery, evidence, and incident handling.

HUMAN OVERSIGHT

Reviews consequential decisions, exceptions, disputed outcomes, and harm signals.

DECISION PRINCIPLE

No single actor should be able to define the objective, grant authority, execute the consequential action, suppress evidence, and approve the result. Separation must be technical where consequence requires it.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

5. Normative Control System

Atomic criteria 01-04 of 18

MYTHOS-ROB-0001-C01 Robot, Application, Cell, and Environment Boundary

The organization MUST define, implement, verify, and maintain robot, application, cell, and environment boundary for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE robot and application boundary; ODD; hazard analysis; safety and cybersecurity ownership

MYTHOS-ROB-0001-C02 Intended Use, Reasonably Foreseeable Misuse, and ODD

The organization MUST define, implement, verify, and maintain intended use, reasonably foreseeable misuse, and odd for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE safety function validation; stop, intervention, safe-state, and stored-energy tests

MYTHOS-ROB-0001-C03 Hazard Analysis and Risk Reduction

The organization MUST define, implement, verify, and maintain hazard analysis and risk reduction for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE sensor calibration; dataset provenance; simulation validity; scenario and field-test coverage

MYTHOS-ROB-0001-C04 Safety Function, Performance Level, and Independence

The organization MUST define, implement, verify, and maintain safety function, performance level, and independence for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE identity, command, network, remote-access, software, firmware, model, and update evidence

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

5. Normative Control System

Atomic criteria 05-08 of 18

MYTHOS-ROB-0001-C05 Emergency Stop, Protective Stop, and Safe State

The organization MUST define, implement, verify, and maintain emergency stop, protective stop, and safe state for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE normal, degraded, adversarial, lost-link, lost-localization, and recovery test results

MYTHOS-ROB-0001-C06 Human Detection, Separation, and Collaborative Operation

The organization MUST define, implement, verify, and maintain human detection, separation, and collaborative operation for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE operator training; human factors; takeover, rescue, maintenance, and incident procedure

MYTHOS-ROB-0001-C07 Mechanical, Electrical, Thermal, Chemical, and Energy Hazards

The organization MUST define, implement, verify, and maintain mechanical, electrical, thermal, chemical, and energy hazards for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE fleet telemetry, mission record, decision trace, near-miss, maintenance, and change history

MYTHOS-ROB-0001-C08 Control System, Network, and Remote Access Security

The organization MUST define, implement, verify, and maintain control system, network, and remote access security for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE acceptance, revalidation, regulatory review, residual risk, retirement, and evidence archive

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

5. Normative Control System

Atomic criteria 09-12 of 18

MYTHOS-ROB-0001-C09 Identity, Authorization, and Command Integrity

The organization MUST define, implement, verify, and maintain identity, authorization, and command integrity for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE robot and application boundary; ODD; hazard analysis; safety and cybersecurity ownership

MYTHOS-ROB-0001-C10 Sensor, Actuator, Tool, Payload, and End-Effector Safety

The organization MUST define, implement, verify, and maintain sensor, actuator, tool, payload, and end-effector safety for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE safety function validation; stop, intervention, safe-state, and stored-energy tests

MYTHOS-ROB-0001-C11 Software, Firmware, Model, and Configuration Provenance

The organization MUST define, implement, verify, and maintain software, firmware, model, and configuration provenance for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE sensor calibration; dataset provenance; simulation validity; scenario and field-test coverage

MYTHOS-ROB-0001-C12 Simulation, Test, Commissioning, and Acceptance

The organization MUST define, implement, verify, and maintain simulation, test, commissioning, and acceptance for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE identity, command, network, remote-access, software, firmware, model, and update evidence

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

5. Normative Control System

Atomic criteria 13-15 of 18

MYTHOS-ROB-0001-C13 Operation, Inspection, Preventive Maintenance, and Calibration

The organization MUST define, implement, verify, and maintain operation, inspection, preventive maintenance, and calibration for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE normal, degraded, adversarial, lost-link, lost-localization, and recovery test results

MYTHOS-ROB-0001-C14 Incident, Near Miss, Forensics, and Corrective Action

The organization MUST define, implement, verify, and maintain incident, near miss, forensics, and corrective action for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE operator training; human factors; takeover, rescue, maintenance, and incident procedure

MYTHOS-ROB-0001-C15 Change, Reprogramming, Tooling, and Revalidation

The organization MUST define, implement, verify, and maintain change, reprogramming, tooling, and revalidation for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE fleet telemetry, mission record, decision trace, near-miss, maintenance, and change history

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

5. Normative Control System

Atomic criteria 16-18 of 18

MYTHOS-ROB-0001-C16 Recovery, Manual Override, and Degraded Operation

The organization MUST define, implement, verify, and maintain recovery, manual override, and degraded operation for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE acceptance, revalidation, regulatory review, residual risk, retirement, and evidence archive

MYTHOS-ROB-0001-C17 Decommissioning, Disposal, and Residual Energy

The organization MUST define, implement, verify, and maintain decommissioning, disposal, and residual energy for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE robot and application boundary; ODD; hazard analysis; safety and cybersecurity ownership

MYTHOS-ROB-0001-C18 Conformance Evidence and Periodic Reassessment

The organization MUST define, implement, verify, and maintain conformance evidence and periodic reassessment for the declared robotics system safety and security boundary. The record MUST identify accountable ownership, evidence state, exact configuration, assumptions, affected people and systems, failure and recovery behavior, uncertainty, transition authority, and reassessment triggers. The operational design domain, hazard controls, human intervention, safe state, physical consequence, field validation, and incident evidence MUST be testable.

MINIMUM EVIDENCE safety function validation; stop, intervention, safe-state, and stored-energy tests

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

6. Evidence and Assessment

Reproduce, compare, challenge, observe, recover, and trace

EXAMINE

Research papers, standards, designs, bills of material, protocols, source, models, data, calibration, configurations, contracts, and claims.

REPRODUCE

Repeat the experiment or assessment with captured versions, seeds, parameters, environment, uncertainty, and acceptance criteria.

COMPARE

Use an honest incumbent, classical, manual, or alternative baseline with equivalent outcome, data, scale, and resource accounting.

CHALLENGE

Apply adversarial input, environmental variation, dependency loss, fault injection, safety cases, security tests, and boundary conditions.

OBSERVE

Measure field or production-like quality, latency, energy, drift, physical behavior, interventions, failures, maintenance, and user impact.

TRACE

Link claim, authority, experiment, configuration, evidence, decision, pilot, change, incident, rollback, and reassessment.

Evidence grades

A

Independently reproduced, current, representative, uncertainty-bounded, integrity-protected, and operationally relevant.

B

Reproduced by the implementing organization with strong provenance, comparator, challenge, and declared limitations.

C

Partial, laboratory-only, simulation-heavy, inherited, or indirect evidence with material uncertainty and dependencies.

D

Roadmap, assertion, demonstration, benchmark excerpt, patent, token metric, press release, or vendor statement without...

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

7. Assurance Views

Six perspectives required for a complete assurance claim

GOVERNANCE

Ownership, purpose, risk tolerance, policy, exception, and decision rights.

ARCHITECTURE

Boundaries, dependencies, failure modes, state, data flow, and portability.

SECURITY

Identity, authorization, isolation, secrets, abuse resistance, and incident response.

OPERATIONS

Reliability, performance, cost, observability, change, recovery, and support.

PRIVACY / RIGHTS

Purpose limitation, minimization, consent, access, correction, deletion, and egress.

HUMAN / SOCIETAL

Usability, accessibility, disclosure, contestability, impact, and human control.

Conformance requires a defensible position across every applicable view. A strong aggregate score cannot compensate for an unowned system, a failed mandatory gate, untested recovery, or evidence below the accepted grade.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

7.2 Evaluation Metrics and Decision Gates

Measures expose utility, uncertainty, safety, physical limits, transition cost, and lifecycle burden

UTILITY

Task outcome, comparator delta, coverage, quality, accuracy, mission success, and stakeholder value.

UNCERTAINTY

Confidence, calibration, variance, sample coverage, reproducibility, sensitivity, and unresolved assumptions.

PERFORMANCE

Latency, throughput, fidelity, range, precision, bandwidth, scale, density, and availability.

SAFETY / SECURITY

Hazard exposure, unsafe action, exploitability, spoofing, physical consequence, intervention, and containment.

RESOURCE

Energy, power, cooling, spectrum, shots, qubits, memory, materials, facility, operator, and maintenance demand.

MATURITY

Standards state, supply chain, interoperability, tooling, skills, support, qualification, and lifecycle readiness.

ECONOMICS

Acquisition, operation, provider, token, facility, migration, insurance, support, and opportunity cost.

TRANSITION

Pilot escape, rollback time, incumbent fallback, portability, lock-in, retirement, and evidence completeness.

Decision gate: thresholds MUST be declared before assessment, include an incumbent baseline and uncertainty statement, and identify any safety, security, cryptographic, physical, reproducibility, or rollback failure that blocks transition.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

8. Failure Modes and Adversarial Scenarios

Challenge assumptions before the system is trusted with consequential work

UNSAFE AUTONOMY

The robot acts outside its operational design domain or safety envelope.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

PERCEPTION COLLAPSE

Occlusion, weather, spoofing, drift, calibration, or domain shift produces hazardous state estimates.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

HUMAN INTERVENTION FAILURE

Operators cannot understand, stop, take over, or recover the system in time.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

CYBER-PHYSICAL COMMAND ABUSE

Compromised identity, network, software, model, or tool issues unsafe motion or process actions.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

FLEET-CORRELATED FAILURE

A map, model, update, scheduler, battery, cloud, or communications dependency affects many robots at once.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

LEARNING REGRESSION

A model or skill update degrades safety, task quality, fairness, explainability, or recovery behavior.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

Adversarial testing MUST protect people and production systems. Use isolated environments, synthetic or minimized data, bounded authority, kill switches, explicit legal and ethical review, and documented stop conditions.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

9. Implementation Profiles

Risk-proportional implementation without weakening mandatory boundaries

FOUNDATIONAL

TYPICAL SCOPE

Low consequence, limited autonomy, non-sensitive data, reversible outputs.

MINIMUM DEPTH

Named owner; inventory; basic evaluation; access control; logging; rollback; annual review.

ADVANCED

TYPICAL SCOPE

Business-critical workflow, sensitive data, multiple tools or providers, moderate autonomy.

MINIMUM DEPTH

Formal threat model; representative evaluation; approval gates; isolated execution; tested recovery; quarterly review.

HIGH ASSURANCE

TYPICAL SCOPE

Safety, security, regulated, financial, identity, or broadly consequential use.

MINIMUM DEPTH

Independent challenge; strongest identity; deterministic enforcement; comprehensive evidence; canary release; continuous monitoring.

Profile selection rule

Choose the highest profile triggered by consequence, autonomy, sensitivity, scale, irreversibility, external dependency, or inability to rapidly detect and recover. Tailoring may strengthen controls; it may not erase a mandatory gate without a controlled exception.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

9.2 Operational Lifecycle

Evidence-bearing operation from concept through retirement

1. **CONCEPT**
   Purpose, owner, impact, boundaries
2. **DESIGN**
   Architecture, threat, data, identity
3. **BUILD**
   Controlled implementation and provenance
4. **EVALUATE**
   Representative, adversarial, recovery tests
5. **RELEASE**
   Approval, canary, rollback, evidence
6. **OPERATE**
   Observe, support, detect, respond
7. **CHANGE**
   Reassess, compare, gate, reverse
8. **RETIRE**
   Revoke, export, dispose, preserve

LIFECYCLE INVARIANT

Every stage MUST leave sufficient evidence for the next authority to understand what was intended, what changed, what was tested, what failed, what was accepted, what remains uncertain, and how to recover or exit.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

10. Adoption Roadmap

A sequenced path from uncontrolled capability to evidence-bearing operation

0-30 DAYS

Establish ownership and truth

Inventory systems and dependencies; classify risk; freeze unsupported claims; identify immediate privilege, data, and evidence gaps.

31-90 DAYS

Create enforceable boundaries

Define policy; isolate execution; implement identity and approval gates; establish representative evaluation and baseline telemetry.

3-6 MONTHS

Prove recovery and operating control

Exercise failure, rollback, revocation, incident, provider exit, and state-recovery scenarios; mature evidence packaging.

6-12 MONTHS

Scale assurance

Automate control checks; expand workload coverage; independent challenge; portfolio metrics; controlled exception expiry; continuous reassessment.

Adoption is complete only when operating evidence demonstrates the selected profile in the actual deployment context. Documentation alone is not conformance.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

10.2 Conformance and Exception Statement

What an assurance claim must contain

SYSTEM / SERVICE

Named, versioned capability and deployment boundary.

PROFILE

Foundational, Advanced, or High Assurance with trigger rationale.

SCOPE

Workloads, users, data, tools, regions, providers, and exclusions.

CRITERIA

Pass, partial, fail, not applicable, and exception status for every criterion.

EVIDENCE

Artifact references, evidence grade, date, environment, and reproducibility.

LIMITATIONS

Known failure modes, unsupported workloads, uncertainty, and residual risk.

EXCEPTIONS

Owner, rationale, compensating control, expiration, and approval.

VALIDITY

Assessment date, change boundary, review date, and reassessment triggers.

Prohibited claim: “compliant” without the named scope, profile, evidence date, limitations, exceptions, and authority accepting residual risk.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

11. Source Authority and Reference Register

Primary sources informing interpretation; verify current status at assessment time

NIST CSF 2.0

Cybersecurity Framework 2.0

https://doi.org/10.6028/NIST.CSWP.29

Enterprise governance and cybersecurity outcome framework.

ISO 13482

Robots and Robotic Devices - Safety Requirements for Personal Care Robots

https://www.iso.org/standard/53820.html

Safety framework for service and personal-care robot classes.

NIST SP 800-53 Rev. 5

Security and Privacy Controls for Information Systems and Organizations

https://doi.org/10.6028/NIST.SP.800-53r5

Broad organizational control baseline for technology systems and services.

NIST AI RMF 1.0

Artificial Intelligence Risk Management Framework

https://doi.org/10.6028/NIST.AI.100-1

Risk management structure for trustworthy AI capabilities used in autonomous systems.

ISO 10218-1:2025

Robotics - Safety Requirements - Industrial Robots

https://www.iso.org/standard/73933.html

Current industrial robot design and inherent-safety requirements.

NIST Response Robot Test Methods

Standard Test Methods for Response Robots

https://www.nist.gov/el/intelligent-systems-division-73500/standard-test-methods-response-robots

Repeatable mobility, sensing, manipulation, endurance, and operator-proficiency tests.

ISO 10218-2:2025

Robotics - Safety Requirements - Industrial Robot Applications and Cells

https://www.iso.org/standard/73934.html

Current integration, commissioning, operation, maintenance, and disposal requirements.

Source currency rule: authorities, specifications, laws, provider services, hardware, protocols, standards status, and research evidence MUST be checked at assessment time. This publication records a 2026-07-24 source snapshot.

MYTHOS-ROB-0001 / ROBOTICS AND AUTONOMY

11.2 Revision History and Decision Register

Permanent identity, controlled change, and publication integrity

VERSION	DATE	STATE	SUMMARY
1.0.0-candidate	2026-07-24	Candidate	Permanent-publication edition; source refresh; expanded criteria, evidence, assurance, and lifecycle guidance.
Next review	2027-01-24	Scheduled	Review source currency, threat evolution, operating evidence, adoption feedback, and proposed revisions.

Publication decisions

PERMANENT IDENTITY The document ID remains stable across revisions; batch or production sequence metadata is not public identity.

CHANGE CONTROL Normative changes require rationale, impact analysis, affected-criterion mapping, and approval.

SUPERSESSION A superseded edition remains traceable; current routes and catalogs identify the active edition.

CORRECTION Material errors require a recorded correction, affected-evidence analysis, and notification appropriate to impact.

ARCHIVAL INTEGRITY Published artifacts receive hashes, metadata, and a release manifest sufficient for independent verification.

END OF PERMANENT PUBLICATION / MYTHOS-ROB-0001

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