



ENGINEERING STANDARDS LIBRARY / OPERATIONAL TECHNOLOGY AND CRITICAL INFRASTRUCTURE

Operational Technology and Critical Infrastructure Standards Portfolio

Permanent standards portfolio for operational technology and critical infrastructure.

PERMANENT DOCUMENT ID

MYTHOS-OT-PORT-0001

PUBLICATION

Portfolio Edition
Version 1.0.0-candidate

ASSURANCE PROFILE

Standard / Advanced
High Assurance

PERMANENT PUBLICATION IDENTITY

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0 ATOMIC CRITERIA	6 ASSURANCE VIEWS	4 IMPLEMENTATION PROFILES	1 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.

INFRASTRUCTURE AND CONTROL TOPOLOGY

Operational Technology and Critical Infrastructure

A trustworthy operational technology and critical infrastructure standards portfolio system is a governed chain of ownership, identity, desired state, enforcement, workload or device behavior, telemetry, recovery, and independently reviewable evidence.

OWNERSHIP

Purpose, service boundary, accountable owner, suppliers, users, and retained responsibility remain explicit.

ENFORCEMENT

Identity, policy, segmentation, configuration, and local safety mechanisms constrain every trust transition.

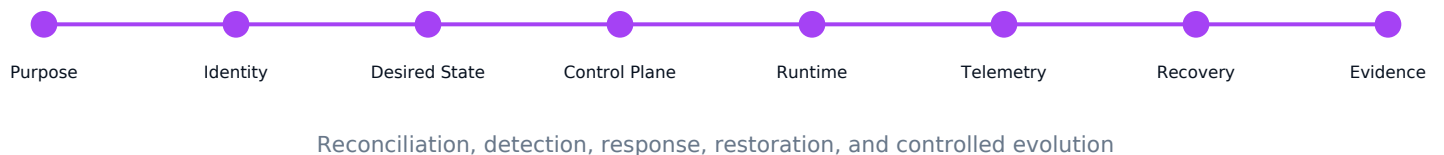
CONTINUITY

Capacity, dependency loss, safe degradation, backup, restoration, rollback, and exit are tested before reliance.

EVIDENCE

Inventory, desired state, runtime observation, tests, incidents, exceptions, and change records form the assurance chain.

GOVERNED INFRASTRUCTURE FLOW



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.

MYTHOS-OT-PORT-0001 / OPERATIONAL TECHNOLOGY

Portfolio Position

Permanent standards portfolio for operational technology and critical infrastructure.

OPERATING POSITION

This portfolio consolidates 1 permanent standards for operational technology and critical infrastructure.

- Use it to establish a shared control vocabulary, implementation sequence, evidence profile, and adoption roadmap.
- Individual standards remain independently identifiable and citable.

MYTHOS-OT-PORT-0001 / OPERATIONAL TECHNOLOGY

Portfolio Register

OPERATING POSITION

MYTHOS-OT-0001 - Industrial Control Systems, Critical Infrastructure, and OT Segmentation Standard

MYTHOS-OT-PORT-0001 / OPERATIONAL TECHNOLOGY

Control Architecture

OPERATING POSITION

Reasoning proposes; policy authorizes; deterministic systems execute; evidence records.

- State, identity, sources, and learning remain governed throughout the lifecycle.
- High-consequence use requires stronger isolation, approval, reproducibility, and recovery.

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Assurance Model

OPERATING POSITION

Six assurance views: governance, architecture, security, operations, privacy/rights, and human/societal impact.

- Three implementation profiles: Foundational, Advanced, and High Assurance.
- Atomic criteria receive pass, partial, fail, not-applicable, or controlled-exception disposition.

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Adoption Sequence

OPERATING POSITION

Establish ownership and inventory.

- Classify consequence and select profile.
- Create enforceable identity, policy, execution, and data boundaries.
- Evaluate representative workloads and adversarial cases.
- Release gradually with rollback and evidence.
- Operate, reassess, and retire with preserved records.

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11. Source Authority and Reference Register

Primary sources informing interpretation; current obligations and provider behavior must be verified 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.

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 control baseline for organizational systems and services.

NIST SP 800-82 Rev. 3 **Guide to Operational Technology Security**

<https://doi.org/10.6028/NIST.SP.800-82r3>
OT architecture, threats, controls, safety context, and lifecycle guidance.

IEC 62443 Series **Security for industrial automation and control systems**

<https://www.iec.ch/industrial-cyber-security>
Industrial security lifecycle, zones, conduits, and component requirements.

MITRE ATT&CK for ICS **ATT&CK for Industrial Control Systems**

<https://attack.mitre.org/matrices/ics/>
Adversary behavior and technique knowledge base for ICS.

CISA ICS **Industrial Control Systems Cybersecurity Guidance**

<https://www.cisa.gov/topics/industrial-control-systems>
Operational advisories, practices, and incident resources.

Source currency rule: authorities, specifications, legal obligations, provider services, firmware, browser behavior, carrier requirements, and operational evidence MUST be checked at assessment time. This publication records a 2026-07-24 source snapshot.



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Industrial Control Systems, Critical Infrastructure, and OT Segmentation Standard

Cyber-physical safety, asset and flow inventory, zones and conduits, remote access, change, monitoring, recovery, and evidence.

PERMANENT DOCUMENT ID

MYTHOS-OT-0001

PUBLICATION

Candidate Standard
Version 1.0.0-candidate

ASSURANCE PROFILE

Standard / Advanced
High Assurance

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OWNERSHIP

Purpose, service boundary, accountable owner, suppliers, users, and retained responsibility remain explicit.

ENFORCEMENT

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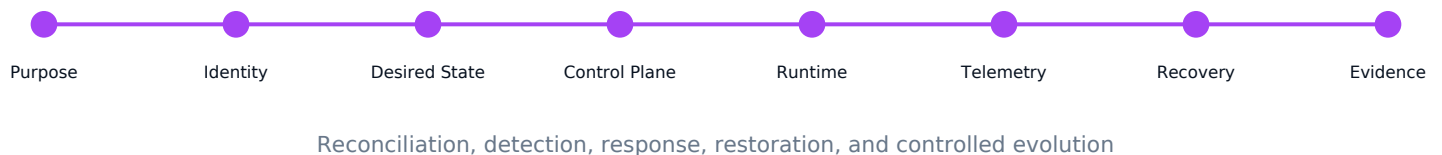
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Capacity, dependency loss, safe degradation, backup, restoration, rollback, and exit are tested before reliance.

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Controlled exception

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

Normalized assessment scale



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

INTERACTIVE NAVIGATION

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Navigation doctrine

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

MYTHOS-OT-0001 / OPERATIONAL TECHNOLOGY

0. Executive Mandate

Purpose, strategic outcome, and non-negotiable operating doctrine

MANDATE

Organizations adopting industrial control systems and operational technology capabilities **MUST** define an owned service boundary, establish enforceable identity and configuration, protect data and safety, test failure and recovery, and preserve evidence sufficient for independent review.

Required outcomes

- Create a durable governance boundary for industrial control systems and operational technology across design, acquisition, deployment, operation, change, and retirement.
- Require risk-proportional segmentation, identity, configuration, telemetry, resilience, recovery, and supplier controls.
- Prevent central automation, administrative tooling, or provider services from becoming unbounded authority.
- Prove operation with representative workloads, devices, failure modes, and restoration exercises.
- Define measurable conformance, exceptions, reassessment triggers, and a viable exit path.

Decision boundary: conformance supports a documented assurance claim for the named scope. It does not prove universal availability, safety, regulatory acceptance, vendor fitness, or immunity from cyber-physical failure.

MYTHOS-OT-0001 / OPERATIONAL TECHNOLOGY

1. Scope and Applicability

Boundary definition, audience, exclusions, and triggering conditions

IN SCOPE

- Architecture, acquisition, configuration, integration, and operation of industrial control systems and operational technology capabilities.
- Human, workload, device, service, network, data, facility, provider, supplier, and evidence dependencies.
- Design, deployment, monitoring, support, incident response, recovery, migration, and retirement.
- On-premises, hosted, managed, carrier, manufacturer, integrator, and externally operated components.

OUT OF SCOPE

- Claims of legal, safety, carrier, or regulatory approval without the responsible authority.
- Vendor certification treated as proof of the adopter configuration or operating effectiveness.
- Theoretical or laboratory behavior presented as production evidence without a declared boundary.
- Inherited controls without documented scope, owner, period, limitations, and shared responsibility.

Applicability triggers

- The capability supports a business-critical, safety-relevant, regulated, public, or externally dependent service.
- The environment can expose sensitive data, identity, control, physical process, communications, or shared infrastructure.
- A management plane, automation system, carrier, provider, or supplier can affect broad operational scope.
- Failure, compromise, or change can be difficult to detect, reverse, isolate, or recover.
- The system depends on hardware, firmware, radio, browser, cloud, endpoint, IoT, OT, or real-time media behavior.

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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.

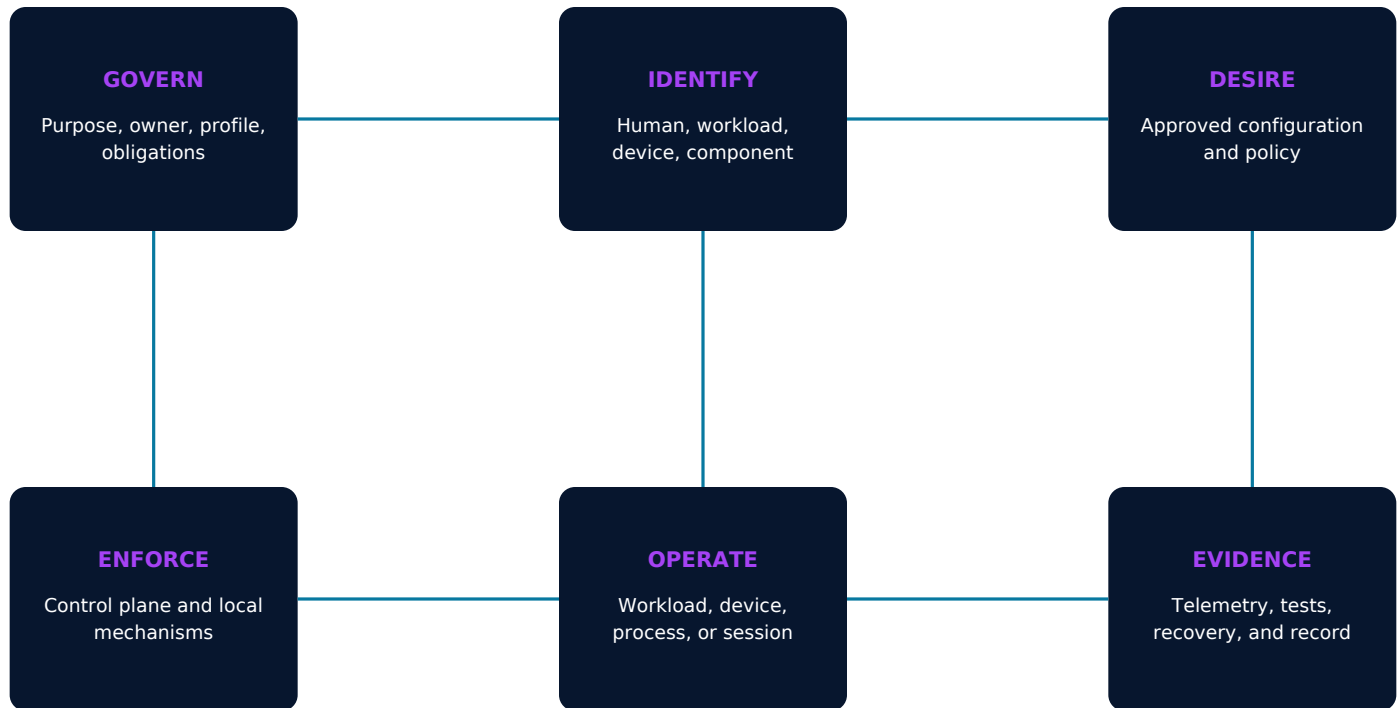
REASSESSMENT TRIGGER

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

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3. Architecture and Trust Model

Separation of governance, management, enforcement, runtime, telemetry, and recovery



Mandatory trust boundaries

- Management planes **MUST** be isolated, strongly authenticated, monitored, and recoverable.
- Identity and policy **MUST** be evaluated at every provider, network, device, workload, and administrative transition.
- Runtime state **MUST** be compared with approved desired state and material drift **MUST** trigger response.
- Safety and continuity mechanisms **MUST** remain available when cloud, WAN, identity, DNS, time, carrier, or management dependencies fail.
- Evidence **MUST** be protected from the systems and administrators whose behavior it is intended to assess.

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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-OT-0001 / OPERATIONAL TECHNOLOGY

5. Normative Control System

Atomic criteria 01-04 of 18

MYTHOS-OT-0001-C01**Process, Mission, and Safety Consequence Definition**

The organization **MUST** define, implement, verify, and maintain process, mission, and safety consequence definition for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE approved service contract; architecture decision; owner and risk sign-off

MYTHOS-OT-0001-C02**OT Asset, Firmware, Logic, and Dependency Inventory**

The organization **MUST** define, implement, verify, and maintain ot asset, firmware, logic, and dependency inventory for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE asset, service, dependency, supplier, region, and lifecycle inventory

MYTHOS-OT-0001-C03**Industrial Zones, Conduits, and Security Levels**

The organization **MUST** define, implement, verify, and maintain industrial zones, conduits, and security levels for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE desired-state configuration; policy evidence; privileged-access and negative tests

MYTHOS-OT-0001-C04**Industrial DMZ and IT-OT Boundary Enforcement**

The organization **MUST** define, implement, verify, and maintain industrial dmz and it-ot boundary enforcement for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE network, data-flow, zone, conduit, radio, device, or trust-boundary diagrams

MYTHOS-OT-0001 / OPERATIONAL TECHNOLOGY

5. Normative Control System

Atomic criteria 05-08 of 18

MYTHOS-OT-0001-C05**Remote Access, Vendor Support, and Session Recording**

The organization **MUST** define, implement, verify, and maintain remote access, vendor support, and session recording for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE runtime logs, traces, metrics, alarms, quality, capacity, and drift evidence

MYTHOS-OT-0001-C06**Engineering Workstation and Portable-Media Control**

The organization **MUST** define, implement, verify, and maintain engineering workstation and portable-media control for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE failure, failover, rollback, restoration, revocation, and recovery exercise

MYTHOS-OT-0001-C07**Controller, HMI, Historian, and Safety-System Separation**

The organization **MUST** define, implement, verify, and maintain controller, hmi, historian, and safety-system separation for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE safety, privacy, residency, consent, or physical-impact assessment

MYTHOS-OT-0001-C08**Industrial Protocol and Command Authorization**

The organization **MUST** define, implement, verify, and maintain industrial protocol and command authorization for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE supplier, carrier, firmware, license, support, portability, and exit evidence

MYTHOS-OT-0001 / OPERATIONAL TECHNOLOGY

5. Normative Control System

Atomic criteria 09-12 of 18

MYTHOS-OT-0001-C09**Passive Monitoring and Safe Detection Methods**

The organization **MUST** define, implement, verify, and maintain passive monitoring and safe detection methods for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE approved service contract; architecture decision; owner and risk sign-off

MYTHOS-OT-0001-C10**Vulnerability Assessment and Compensating Controls**

The organization **MUST** define, implement, verify, and maintain vulnerability assessment and compensating controls for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE asset, service, dependency, supplier, region, and lifecycle inventory

MYTHOS-OT-0001-C11**Change Windows, Hazard Review, and Rollback**

The organization **MUST** define, implement, verify, and maintain change windows, hazard review, and rollback for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE desired-state configuration; policy evidence; privileged-access and negative tests

MYTHOS-OT-0001-C12**Logic, Configuration, Recipe, and Golden Backup**

The organization **MUST** define, implement, verify, and maintain logic, configuration, recipe, and golden backup for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE network, data-flow, zone, conduit, radio, device, or trust-boundary diagrams

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5. Normative Control System

Atomic criteria 13-15 of 18

MYTHOS-OT-0001-C13**Time, Naming, and Infrastructure Dependency Resilience**

The organization **MUST** define, implement, verify, and maintain time, naming, and infrastructure dependency resilience for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE runtime logs, traces, metrics, alarms, quality, capacity, and drift evidence

MYTHOS-OT-0001-C14**Local Manual Operation and Safe Degradation**

The organization **MUST** define, implement, verify, and maintain local manual operation and safe degradation for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE failure, failover, rollback, restoration, revocation, and recovery exercise

MYTHOS-OT-0001-C15**Cyber-Physical Incident Command and Coordination**

The organization **MUST** define, implement, verify, and maintain cyber-physical incident command and coordination for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE safety, privacy, residency, consent, or physical-impact assessment

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5. Normative Control System

Atomic criteria 16-18 of 18

MYTHOS-OT-0001-C16**Recovery Order, Spare Strategy, and Restoration Exercise**

The organization **MUST** define, implement, verify, and maintain recovery order, spare strategy, and restoration exercise for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE supplier, carrier, firmware, license, support, portability, and exit evidence

MYTHOS-OT-0001-C17**Supplier, Integrator, and End-of-Life Governance**

The organization **MUST** define, implement, verify, and maintain supplier, integrator, and end-of-life governance for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE approved service contract; architecture decision; owner and risk sign-off

MYTHOS-OT-0001-C18**Safety Evidence, Exceptions, and Periodic Reassessment**

The organization **MUST** define, implement, verify, and maintain safety evidence, exceptions, and periodic reassessment for in-scope industrial control systems and operational technology capabilities. The control boundary **MUST** identify accountable ownership, affected services and assets, authoritative desired state, trust transitions, failure and recovery behavior, minimum evidence, inherited responsibility, and reassessment triggers.

MINIMUM EVIDENCE asset, service, dependency, supplier, region, and lifecycle inventory

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6. Evidence and Assessment

Examine, interview, test, observe, restore, and trace

EXAMINE

Policies, inventories, diagrams, configuration, code, firmware, contracts, provider evidence, logs, exceptions, and lifecycle records.

INTERVIEW

Accountable owners, architects, engineers, operators, safety personnel, security teams, vendors, carriers, integrators, and responders.

TEST

Identity, segmentation, policy, negative paths, malformed input, capacity stress, dependency loss, failover, rollback, and revocation.

RESTORE

Independent restoration of configuration, data, service, device, controller, cluster, media, or browser state from protected evidence.

OBSERVE

Production-like performance, quality, drift, resource use, physical behavior, alarms, user impact, and incident execution.

TRACE

End-to-end linkage from approved intent and identity through change, runtime behavior, telemetry, outcome, exception, and review.

Evidence grades

A

Independently reproducible, complete, current, integrity-protected, and representative.

B

Reproduced by the implementing organization with strong traceability and controlled scope.

C

Partially reproduced or indirect; limitations, inherited responsibility, and uncertainty recorded.

D

Assertion, diagram, design intent, certificate, or vendor statement without reproduced behavior.

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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.

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7.2 Evaluation Metrics and Decision Gates

Measures must expose service behavior, control effectiveness, failure, uncertainty, and cost

SERVICE

Availability, correctness, coverage, quality, latency, throughput, and user or process outcome.

CONTROL

Unauthorized attempt, policy denial, drift, segmentation escape, privilege, and exception exposure.

RESILIENCE

Failover success, recovery time, data loss, safe degradation, restore validity, and dependency survival.

SECURITY

Exploitability, credential exposure, supply-chain integrity, attack detection, containment, and revocation.

CAPACITY

Utilization, saturation, queueing, radio or fabric headroom, thermal margin, quota, and forecast error.

OPERATIONS

Change failure, mean time to detect, repair, support burden, vendor escalation, and evidence completeness.

PRIVACY / SAFETY

Unauthorized egress, retention breach, consent coverage, unsafe action, physical consequence, and contestability.

LIFECYCLE

Patch debt, end-of-support exposure, portability, replacement time, retirement completion, and reassessment age.

Decision gate: thresholds **MUST** be declared before assessment, cover representative load and failure conditions, and identify mandatory safety, identity, recovery, and evidence failures that block promotion.

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8. Failure Modes and Adversarial Scenarios

Challenge assumptions before the system is trusted with consequential work

UNSAFE ASSESSMENT

Scanning or remediation disrupts a physical process or safety function.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

REMOTE ACCESS COMPROMISE

Vendor or engineering access bypasses zones, approval, or session oversight.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

SAFETY COUPLING

Cybersecurity failure propagates into a safety system assumed to be independent.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

LEGACY PROTOCOL ABUSE

Unauthenticated or unsafe commands cross an industrial conduit.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

LOGIC LOSS

Controller programs, recipes, or configurations cannot be restored correctly.

REQUIRED: PREVENT | DETECT | CONTAIN | RECOVER | EVIDENCE

RECOVERY SEQUENCE FAILURE

Systems restart in an order that damages process stability or equipment.

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-OT-0001 / OPERATIONAL TECHNOLOGY

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.
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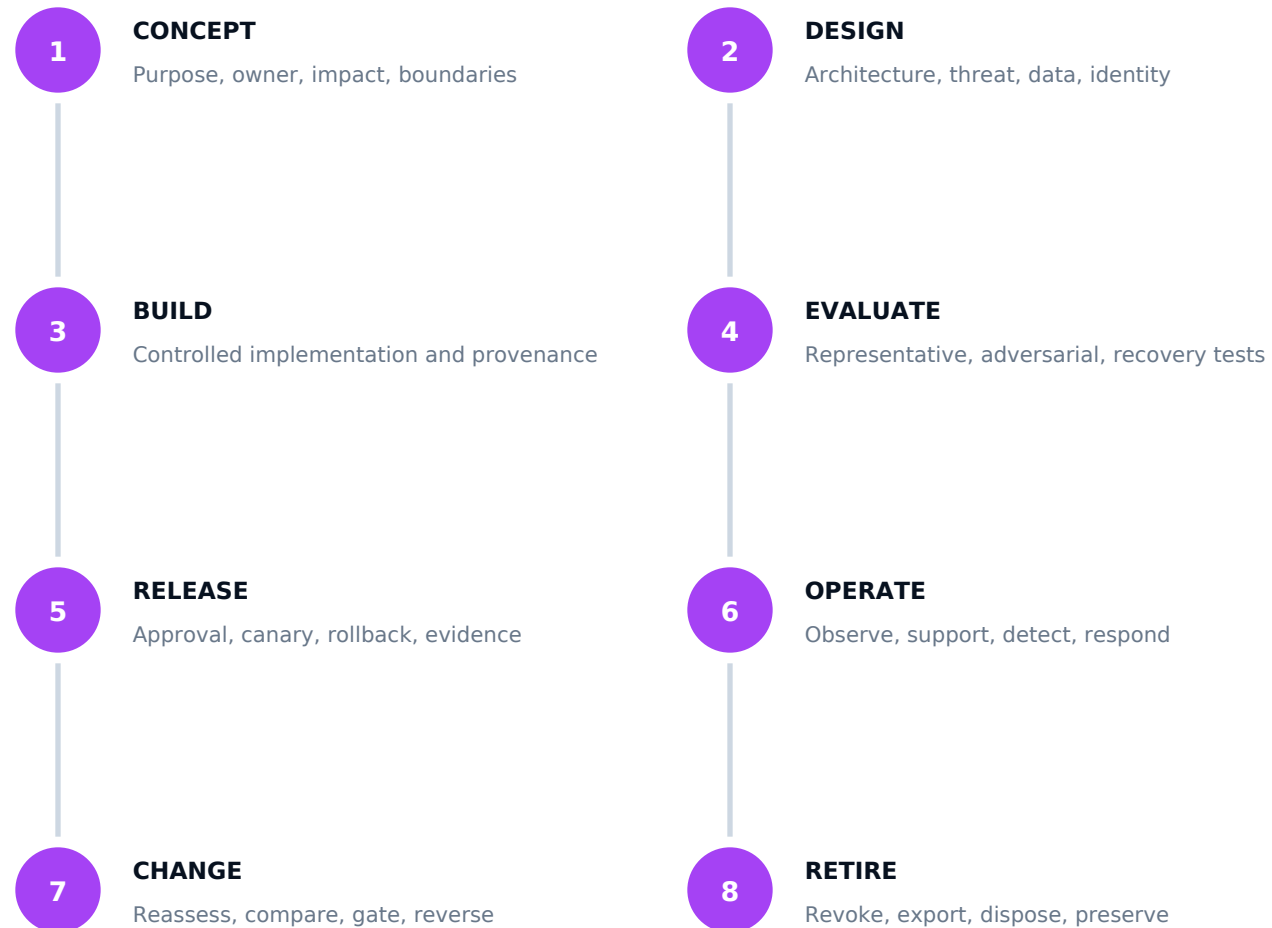
Profile selection rule

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.

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9.2 Operational Lifecycle

Evidence-bearing operation from concept through retirement



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.

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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.

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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.

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11. Source Authority and Reference Register

Primary sources informing interpretation; current obligations and provider behavior must be verified 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.

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 control baseline for organizational systems and services.

NIST SP 800-82 Rev. 3 **Guide to Operational Technology Security**

<https://doi.org/10.6028/NIST.SP.800-82r3>
OT architecture, threats, controls, safety context, and lifecycle guidance.

IEC 62443 Series **Security for industrial automation and control systems**

<https://www.iec.ch/industrial-cyber-security>
Industrial security lifecycle, zones, conduits, and component requirements.

MITRE ATT&CK for ICS **ATT&CK for Industrial Control Systems**

<https://attack.mitre.org/matrices/ics/>
Adversary behavior and technique knowledge base for ICS.

CISA ICS **Industrial Control Systems Cybersecurity Guidance**

<https://www.cisa.gov/topics/industrial-control-systems>
Operational advisories, practices, and incident resources.

Source currency rule: authorities, specifications, legal obligations, provider services, firmware, browser behavior, carrier requirements, and operational evidence MUST be checked at assessment time. This publication records a 2026-07-24 source snapshot.

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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-OT-0001

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