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The Principled Scheduler: Enforcing a Hard 0.3 RoH Ceiling Through Versioned CybostateFactors, Physiological Grounding, and Rust's Type System

Architectural Strategy: Evolving CybostateFactor with Versioned Schemas and KSR-Aware Governance

The refinement of the OrganicCpuScheduler to enforce a hard 0.3 Risk of Harm (RoH) ceiling necessitates a foundational decision regarding the evolution of its core data structure, the `CybostateFactor`. This architectural choice is not merely technical; it is a strategic commitment that balances immediate operational continuity with long-term safety imperatives. The analysis of available materials reveals that a conservative, purely backward-compatible approach risks entrenching legacy limitations, while an aggressive, full refactor introduces significant migration risk. The most robust path forward lies in a pragmatic, phased evolution centered on a versioned schema, coupled with a governance model that makes structural changes transparent and auditable through the lens of Knowledge (K), Social Impact (S), and Risk (R) [1]. This strategy allows for the coexistence of legacy systems under a more compatible adapter layer while progressively migrating toward a stricter, RoH-native framework, ensuring that every change is a deliberate, documented governance event rather than a silent refactor [1] [94].

The primary challenge in evolving `CybostateFactor` is managing dependencies across a distributed system where not all components can be updated simultaneously. A "compat-first" evolution addresses this by introducing an `OrganicCpuAdapter` layer that wraps legacy `CybostateFactor` instances [1]. This adapter would compute the RoH value from the older fields and enforce the 0.3 ceiling before passing control to legacy schedulers or drivers. While this ensures backward compatibility, it creates a dependency on the adapter and may obscure the true state of the system, as the underlying factors may lack the granularity needed for a principled RoH calculation. Conversely, a "clean RoH-aligned redesign" proposes a complete refactoring of `CybostateFactor` into normalized components—physiological load, cognitive load, and security integrity—each with typed ranges and weights that directly mirror the RoH equation used in the fear module [1]. This approach provides a much stronger foundation for verifiable safety but presents a high barrier to entry for existing devices and software. The synthesis of these two directions points toward a superior third way: a versioned schema. This involves defining both `CybostateFactorV1` (representing the current, existing fields) and `CybostateFactorV2` (the new, normalized, RoH-centric structure). By implementing conversion traits between these versions, the system can facilitate interoperability where necessary, providing a clear migration path without forcing an abrupt transition [1].

To operationalize this versioned schema, the `DeviceCapabilityManifest` (DCM) must be extended to include a `cfschema_version` field [1]. This addition transforms the device binding process into a version negotiation protocol. When a BCI/HCI node attempts to connect to the grid, the scheduler queries the device's DCM to determine its supported `CybostateFactor` schema version. Based on site policies, jurisdictional rules (e.g., US-AZ vs. US-CA), and the device's capabilities, the scheduler can then decide whether to negotiate the use of the v1 schema for maximum compatibility or mandate the v2 schema for strict RoH-native scheduling [1]. This dual-track environment is critical for a large-scale deployment. It allows older hardware and software to continue operating safely under the adapter layer while creating an incentive for vendors and developers to adopt the newer, safer v2 schema for access to advanced zones or higher performance workloads. This negotiation logic itself becomes part of the `cyconetics-bci-policy` crate, forming a dynamic and configurable bridge between legacy and future-proof systems [1].

Beyond the technical implementation, this evolutionary strategy must be deeply integrated with the project's governance philosophy. The concept of making CybostateFactor revisions measurable governance events is a powerful insight that elevates the scheduler from a piece of code to a cornerstone of ethical AI alignment [1]. Every modification to the underlying assumptions of the scheduler—whether it is a change in how cognitive load is measured, a recalibration of band thresholds, or the addition of a new physiological metric—should be treated as a formal governance action. This prevents "silent refactors," where changes are made without proper review or documentation, which could inadvertently increase risk [1]. The proposed KSR-aware evolution formalizes this process. Each change to the CybostateFactor schema or the RoH calculation algorithm must be accompanied by a DID-signed manifest update. This manifest would serve as an immutable record, documenting the old and new schema versions, and critically, a summary of the change's impact on the system's K/S/R profile [1]. For example, a change that improves metric grounding might be documented as having a low R impact due to enhanced safety, while a change that adds a new feature might have a high K impact. These artifacts would be stored on Eibon trails, creating a complete audit spine for the scheduler's design decisions [1] [124]. This aligns perfectly with the mission of creating auditable frameworks for cybernetic capability [124]. The table below outlines the key differences between the evolutionary paths and the proposed hybrid solution.

Feature	Conservative Path (Compat-First)	Aggressive Path (Clean Refactor)	Hybrid Solution (Versioned Schema)
Schema Structure	Adapts existing `CybostateFactor` fields via an `OrganicCpuAdapter` wrapper [1].	Introduces a new, normalized `CybostateFactorV2` with explicit load/integrity components [1].	Defines both `CybostateFactorV1` and `CybostateFactorV2` with conversion traits for interoperability [1].
Backward Compatibility	High; allows legacy systems to operate unchanged.	None; requires all components to be updated.	Medium; enables coexistence of v1 and v2 systems during a phased migration [1].
Risk Profile	Low initial risk, but potential for long-term technical debt and obscured safety calculations [1].	High initial risk due to migration effort, but leads to a more robust and secure final architecture [1].	Balanced risk; manages migration complexity while ensuring a clear path to a safer future state [1].
Governance Model	Implicit; changes are often silent code updates.	Explicit; requires a coordinated, top-down upgrade of the entire system.	Explicit and Auditable; schema changes are governed events with DID-signed manifests and KSR impact analysis [1].
Integration Points	Requires modification of the adapter logic.	Requires modification of all dependent crates and services.	Requires negotiation logic in the scheduler and conversion traits between versions [1].

This hybrid strategy, therefore, represents the most prudent and philosophically sound approach. It acknowledges the reality of a heterogeneous ecosystem while relentlessly pushing it toward a state of verifiable safety. The extension of the DCM with a `cfschema_version` field is a simple yet profound change that empowers this evolution [1]. It decentralizes the decision-making authority for the schema version to the point of connection, allowing the system to adapt dynamically to the capabilities and trustworthiness of the attached hardware. This aligns with the principles of sovereign control-plane consensus mentioned in the project's mission [124]. The ultimate goal is to create a system where the `OrganicCpuScheduler` is not just a gatekeeper but an evolving entity whose very structure reflects a continuous, transparent, and accountable improvement in its understanding and management of human risk.

Physiological Grounding: Mapping Biosignals to Verifiable Risk of Harm Bands

A central tenet of refining the OrganicCpuScheduler is moving beyond abstract, policy-driven definitions of Risk of Harm (RoH) to a framework grounded in concrete, measurable human physiology. The provided materials strongly advocate for this shift, arguing that tethering RoH bands to validated neurophysiological and biometric signals transforms the scheduler from a passive policy enforcer into an active psychophysiological monitor [1]. This grounding elevates the system's reliability, enabling it to respond to real-time changes in a user's mental and physical state, thereby constraining psych-load and mitigating risks like blood-drain more effectively [1]. The existing definition of RoH as a weighted combination of physiological load, cognitive load, and security integrity provides a natural tripartite structure for mapping these biosignals [1]. A rich body of academic literature offers validated biomarkers for each of these components, providing a clear roadmap for constructing a metric-aware `CybostateFactor` and designing the necessary calibration protocols.

The first component, **physiological load**, primarily reflects the activity of the autonomic nervous system and can be reliably indexed by Heart Rate Variability (HRV) [69] [95]. Research indicates that higher resting HRV is a proxy for cardiac vagal tone and is correlated with better prefrontal inhibitory control and resilience to stress [69]. Conversely, reduced HRV signifies sympathetic dominance and is associated with states of acute stress or fear [56]. Other strong indicators of physiological arousal include electrodermal activity (EDA/GSR), which measures skin conductance, and respiration rate [96]. A study by Masuda and Yairi demonstrated that a deep learning model using GSR, heart rate, and respiration rate could classify fear levels with high accuracy, underscoring the utility of these peripheral signals [96]. Therefore, a `PhysiologicalMetrics` sub-structure within `CybostateFactorV2` could incorporate features like mean heart rate, RMSSD (a time-domain measure of HRV), and mean skin conductance level (SCL) [56] [70]. The integration of these metrics allows the scheduler to detect not just overt distress but also subtle shifts in the user's autonomic state that may precede a conscious feeling of overload.

The second and perhaps most critical component is **cognitive load**. Electroencephalography (EEG) provides a direct window into cortical activity and has been extensively studied for its ability to estimate cognitive workload [8] [21]. The literature points to several robust EEG-derived biomarkers that can be incorporated into the scheduler's assessment. One of the most reliable is the **Frontal Alpha Asymmetry**, where greater power in the left frontal region (reduced alpha band power, 8–13 Hz) is associated with positive emotional valence and approach motivation, while right-sided dominance correlates with negative valence and withdrawal [52]. Another powerful marker is the **Theta/Beta Ratio (TBR)**, particularly in frontal-midline regions. The TBR has been shown to increase linearly with working memory load and task difficulty, serving as a robust index of cognitive control demands and sustained attention [52]. Furthermore, increased power in the **Frontal-Midline Theta** band (4–8 Hz) is directly linked to the degree of cognitive control required by a task [52]. Finally, signal complexity measures like **Differential Entropy (DE)**, which captures the unpredictability of the EEG signal, have also been shown to increase with mental workload [70]. By integrating these specific frequency-band analyses, the scheduler can move beyond simplistic assumptions about task difficulty and build a nuanced, real-time picture of the user's cognitive state. The table below summarizes these key biomarkers and their relevance to the RoH components.

RoH Component	Biosignal	Biomarker	Relevance to Cyconetic Systems
Physiological Load	ECG / PPG	Heart Rate Variability (HRV)	Indexes autonomic nervous system balance, stress, and prefrontal control. [56] [69] [95]
Physiological Load	GSR Sensor	Skin Conductance Level (SCL)	Measures sympathetic arousal and fear conditioning responses. [36] [96]
Cognitive Load	EEG	Frontal Alpha Asymmetry	Indicates emotional valence (approach vs. withdrawal motivation). [52]
Cognitive Load	EEG	Theta/Beta Ratio (TBR)	Robust marker of working memory load, vigilance, and cognitive control. [52]
Cognitive Load	EEG	Frontal-Midline Theta Power	Correlates with the degree of cognitive control required by a task. [52]
Cognitive Load	EEG	Differential Entropy (DE)	Measures signal complexity, increasing with mental workload. [70]
Security Integrity	Network / System Logs	Anomaly Detection Score	Quantifies deviation from normal operational patterns indicative of breaches. [77] [102]

Finally, the **security integrity** component of RoH addresses potential threats to the system's own stability and the user's data. While less explored in the provided context, this can be modeled using machine learning techniques trained to detect anomalous patterns in network traffic, system call logs, or data transmission error rates [77] [102]. A drop in this integrity score would contribute directly to the overall RoH, signaling a potential vulnerability that could have downstream effects on the user's cognitive and physiological state.

Introducing these concrete metrics necessitates a rigorous calibration process to ensure the abstract RoH bands correspond to real-world psychological states [1]. The proposal for lab-grid calibration experiments is therefore non-negotiable [1]. These experiments would involve presenting users with standardized tasks known to induce specific states—for instance, n-back tasks for high cognitive load, relaxation exercises for low load, and fear-inducing stimuli for high arousal [21] [35]. During these sessions, the system would record the corresponding biosignals and map them to subjective reports of effort or stress. This empirical data would be used to tune the internal weighting and normalization constants of the RoH calculation, establishing a verifiable link between the objective metrics and the qualitative experience of the user [33] [43]. The results of these calibrations would be artifacts on the sovereign registry, forming a continuously updated baseline for the scheduler's operation. This iterative process ensures that the Green, Yellow, and Red RoH bands are not arbitrary thresholds but are instead anchored in validated human science, fulfilling the project's mission to create auditable and ethically aligned frameworks [124].

Enforcement Model: A Hybrid Compile-Time and Runtime Framework in Rust

The enforcement of the hard 0.3 Risk of Harm (RoH) ceiling requires a robust and resilient mechanism. The discussion of compile-time versus runtime enforcement reveals a false dichotomy; the optimal solution is a hybrid model that leverages the distinct strengths of both approaches, creating a layered defense-in-depth strategy. A purely runtime-based fear module offers flexibility but remains vulnerable to unexpected conditions arising after compilation [1]. A purely compile-time model is exceptionally safe against certain classes of errors but can be brittle and unable to account for dynamic, real-world variations [10]. By combining compile-time guardrails that eliminate invalid configurations before execution with a dedicated runtime kernel that handles dynamic decision-making, Cyconetic Systems can achieve a level of safety assurance that is both powerful and adaptable. This model fully exploits the capabilities of the Rust programming language, using its type system, procedural macros, and other advanced features to embed safety directly into the fabric of the scheduler [11] [72].

The first tier of this hybrid model consists of **compile-time enforcement**, acting as a "strong law" against obviously illegal or unsafe configurations. This tier operates by validating inputs and constraints at the boundary of the system, preventing malformed or overly risky artifacts from ever reaching the runtime environment. Procedural macros are the ideal tool for this task. A macro could be developed to inspect `DeviceCapabilityManifests` (DCMs) and site policy files at compile time [1]. This macro would validate that all required fields are present, that numerical values fall within permissible ranges, and crucially, that any declared tasks or zones do not violate the fundamental RoH constraint. For example, it could reject a DCM that specifies a task with a theoretically possible RoH exceeding 0.3, even if that scenario is unlikely to occur in practice. This static analysis catches errors early, leveraging the Rust compiler's guarantees to ensure a higher level of correctness [67].

Another powerful technique for compile-time enforcement is the use of const generics to create "RoH-bounded task types" [10]. This approach uses Rust's type system to encode safety properties directly into the type signature of a task. One could define a phantom parameter or a const generic on a `Task` struct, such as `Task<RohMax<const N: u8>>>`. The scheduler could then implement trait bounds to restrict high-risk operations. For instance, a function intended to perform a bioscale upgrade could be constrained to only accept `Task<RohMax<{0x19}>>`, where `0x19` hex corresponds to a RoH of 0.25. Any attempt to pass a task with a higher bound would result in a compile-time error. This method moves many safety checks from the runtime `OrganicCpuScheduler` into the type checker, reducing runtime overhead and catching logical errors before deployment [10] [22]. While const generics cannot directly use runtime variables, they are perfect for encoding fixed, compile-time-known safety limits, such as the maximum allowable RoH for different task classes [22]. The combination of manifest-validation macros and bounded task types forms a formidable first line of defense, ensuring that the scheduler only ever receives well-formed, statically-safe requests.

The second tier is the **runtime enforcement kernel**, which serves as the flexible "fear module" responsible for real-time decision-making [1]. Even with rigorous compile-time checks, the actual physiological state of a user is dynamic and subject to unpredictable fluctuations. The `OrganicCpuScheduler` runs continuously in the background, monitoring the live `CybostateFactor` derived from biosignals. Its core is a `decide` function that evaluates incoming tasks against the current state and established policies [1]. This function would return a `SchedulerDecision`, an enum that clearly defines the possible outcomes: `Authorize`, `Defer`, `Reject`, or `Escalate` [1]. The `Escalate` option is critical for handling violations of the hard 0.3 ceiling, triggering an immediate halt of the offending task and logging the incident onto an Eibon trail for governance review [1]. This runtime component provides the necessary adaptability to handle the complexities of human interaction with technology, throttling or rejecting tasks when estimates approach the danger threshold, independent of any compile-time checks [1].

This mirrors the behavior of the documented fear module and ensures that the system's response is always tied to the user's current, real-time condition.

The implementation of this hybrid model in Rust should be carefully structured to maintain separation of concerns. The compile-time validation logic should reside in a separate procedural macro crate, such as `cyconetics-bci-policy-macros`. This crate would expose the macros used to validate DCMs and generate safe task types. The core runtime logic, including the `CybostateFactor` and `SchedulerDecision` types, the `RohBand` enum, and the `decide` function, would be housed in a core library like `cyconetics-bci-policy-core` [1]. This modular design clearly delineates the static, verification-focused aspects from the dynamic, enforcement-focused aspects. It also allows developers to opt-in to the stronger safety guarantees by using the macros, while still permitting the use of the core library for less-critical tasks. This two-tier enforcement model, powered by Rust's unique combination of static analysis and runtime safety, provides the most comprehensive and resilient framework for enforcing the 0.3 RoH ceiling, balancing the need for absolute safety with the flexibility required for complex, real-world applications [11] [72].

Policy and Task Mapping: Defining Actionable Rules for Exploratory and Critical Workloads

Defining standard CybostateFactor ranges and mapping them to task classes is the central purpose of refining the OrganicCpuScheduler. This process translates the abstract concept of a 0.3 Risk of Harm (RoH) ceiling into a concrete, actionable policy that governs all computational activities within the Phoenix and San Jolla grids [1]. The policy must differentiate between task classes, primarily "exploratory" and "critical," as their inherent risks and tolerance for failure differ dramatically. Exploratory tasks, such as drafting research prompts or running simulations, carry lower risk and are suitable for a wider range of user states. In contrast, critical tasks, such as driver onboarding or provisioning bioscale upgrades, demand a significantly lower RoH threshold and often require explicit policy approval to mitigate catastrophic consequences [1]. The scheduler's `decide` function must embody these distinctions, using a matrix that links the user's current RoH band to the set of tasks permitted at that level of physiological and cognitive load.

The RoH scale must be partitioned into distinct, named bands to provide clear guidance for both the scheduler's logic and for human oversight. Based on the 0.3 ceiling, a logical banding scheme is as follows:

- **Green Band:** RoH in the range $[0.0, 0.15)$. In this state, the user is considered to be at low risk, with minimal physiological strain and stable cognitive resources. The scheduler grants broad permissions, allowing for a wide variety of activities.
- **Yellow Band:** RoH in the range $[0.15, 0.25)$. Here, the user is entering a zone of moderate risk. Physiological markers may show signs of stress, and cognitive resources are becoming taxed. The scheduler begins to impose restrictions, limiting the scope and impact of allowable tasks.
- **Red Band:** RoH in the range $[0.25, 0.3)$. This represents a state of high risk, approaching the system's tolerance limit. The user is likely experiencing significant physiological strain or cognitive overload. The scheduler severely curtails permissions, allowing only essential maintenance and rollback operations.
- **Hard Reject Threshold:** RoH ≥ 0.3. This is a non-negotiable boundary. Any computation that would cause the RoH to reach or exceed this level must be immediately rejected and escalated [1]. This enforces the documented "non-negotiable" nature of the RoH ceiling and triggers the fear-module behavior.

With these bands defined, the next step is to construct a matrix that maps task classes to the actions permitted within each band. This matrix is the core of the scheduler's policy engine. The following tables outline the proposed mappings.

RoH Band	Permitted Actions
Green	All exploratory tasks (e.g., research prompts, simulation, low-bandwidth HCI exports); low/medium cognitive complexity analytics; manifest editing; documentation.
Yellow	Moderate-impact tasks with bounded scope (e.g., parameter tuning, profile creation, small code diffs); critical tasks only if they have low HCI risk and are of short duration.
Red	Only minimal maintenance and rollback tasks (e.g., terminating a runaway process, initiating a safe shutdown sequence); no new exploratory load; no high-impact, closed-loop, or psych-dense protocols.
Hard Reject	Any task that would push the total RoH to 0.3 or above. All such tasks are rejected and escalated via Eibon trails.

This policy directly supports the mission of constraining psych-load and blood-drain risk while preserving the autonomy of augmented citizens [1]. The distinction between task classes is paramount. Critical tasks, by definition, involve high-stakes operations where failure could lead to significant harm. These include activities like modifying XR-grid zoning policies, provisioning bioscale upgrades, or engaging in any closed-loop protocol that directly interfaces with actuators [1]. Due to their high stakes, critical tasks should only be authorized when the user is in a deep Green band state, with a RoH well below 0.2. Furthermore, the scheduler could be configured to require an explicit, policy-approved flag for any critical task, ensuring that such high-risk operations are intentional and justified. Exploratory tasks, on the other hand, are characterized by lower impact and higher uncertainty. They form the bulk of creative and research-oriented work and are designed to be resilient to minor fluctuations in the user's state. Their default authorization in the Green band and limited allowance in the Yellow band reflect their inherently lower risk profile.

The implementation of this policy in Rust would involve defining enums for `TaskClass`, `RohBand`, and `SchedulerDecision` [1]. The `decide` function would take the current `CybostateFactor` snapshot and a `ScheduledTask` descriptor as input. The task descriptor would contain metadata such as `task_class` (exploratory/critical), `expected_duration` (short/medium/long), and `hci_risk_band` (low/medium/high), aligning with existing HCI profile types [1]. The function's logic would first calculate the total RoH. If it meets or exceeds 0.3, it immediately returns `SchedulerDecision::Escalate`. Then, it consults the policy matrix, checking the user's RoH band and the task's characteristics against the rules outlined above. For example, if the RoH is in the Red band, the function would reject any non-maintenance task. If the task is marked as `critical` and the RoH is above a certain threshold (e.g., 0.2), it would reject the task unless a special override permission is granted. Finally, upon successful execution of an authorized task, the function would increment a `KnowledgeFactor`, as described in the initial prompt, contributing to the continuous learning and improvement of the system [1]. This structured, policy-driven approach ensures that the scheduler's decisions are consistent, transparent, and directly aligned with the documented safety goals of the Cyconetic Systems platform.

System Integration and Artifact Specification: Embedding the Scheduler into Core Operations

For the refined OrganicCpuScheduler to be effective, it cannot exist as a standalone module but must be deeply and mandatorily embedded into the core operational workflow of Cyconetic Systems. Its enforcement logic must be woven into the fabric of the system at key decision points, transforming it from an optional check into an indispensable prerequisite for high-impact actions. This "code is law" principle ensures that the 0.3 Risk of Harm (RoH) ceiling is not merely a guideline but a hard constraint governing all activity in designated Phoenix and San Jolla zones [1]. The successful integration of the scheduler relies on specifying clear interfaces, identifying critical hook points, and generating the necessary artifacts—such as updated schemas, Rust modules, and policy templates—that enable a cohesive and verifiable implementation across the entire software stack.

The integration hooks must be placed at all stages where a computational task can initiate a significant change in the system's state or interact directly with the user's physiology. The initial prompt correctly identifies several critical touchpoints that must be modified to require scheduler approval [1]. First, any attempt to bind a `CyconeticsBciDevice` to a zone must be gated by the scheduler. The device's manifest, which includes its `cfschema_version` and declared capabilities, would be presented to the scheduler to determine if the binding is permissible given the current session state [1]. Second, starting a `bcistream` in a high-impact or hazardous XR zone must be blocked until an `Authorize` decision is received. Third, any code within a site-policy crate that is responsible for accepting new AZ/CA XR-grid sessions with a hazard level of 2 or higher must call the scheduler's `decide` function as its first check [1]. By placing these mandatory calls to the scheduler at the boundaries of sensitive operations, the system ensures that no potentially harmful action can proceed without a verified green light based on the user's real-time state.

The output of this research turn should be a set of concrete, reusable artifacts that provide a complete blueprint for implementation. These artifacts translate the analytical findings into tangible components for the development team.

1. **Refined `CybostateFactor` Struct (Rust):** A new `CybostateFactorV2` struct definition that explicitly models the three components of RoH using validated physiological and cognitive metrics. This struct would replace the ad-hoc representation in the existing scheduler snippet.

   ```
   // Example artifact: Refined CybostateFactorV2 struct
   /// Represents the user's real-time state, broken down into components
   pub struct CybostateFactorV2 {
       pub physiological_load: PhysiologicalMetrics,
       pub cognitive_load: CognitiveMetrics,
       pub security_integrity: f32, // Normalized score from 0.0 to 1.0
   }

   pub struct PhysiologicalMetrics {
       pub hr_mean: f32,        // Mean heart rate in BPM
   ```

```
    pub hrv_rmssd: f32,      // Root Mean Square of Successive Differe
    pub eda_mean: f32,       // Mean skin conductance in µS
}

pub struct CognitiveMetrics {
    pub tbr_frontal_midline: f32, // Theta/Beta Ratio from Fz electroc
    pub alpha_asymmetry: f32,    // Left frontal alpha - Right frontal
    pub gamma_power: f32,        // Average gamma power across frontal
}
```

2. **Core Scheduler Module (`organic_cpu.rs`):** A complete Rust module located in `cyconetics-bci-policy/src/organic_cpu.rs`. This module would contain the `SchedulerDecision` enum, the `RohBand` enum, the `decide` function, and helper functions for calculating RoH and applying policy rules [1].

```
// Example artifact: SchedulerDecision enum
/// The possible outcomes of a scheduling decision.
#[derive(Debug, Clone, PartialEq)]
pub enum SchedulerDecision {
    Authorize,
    Defer, // Retry later with a backoff strategy
    Reject, // Permanently disallow based on policy
    Escalate, // RoH ceiling has been breached
}
```

3. **Updated `DeviceCapabilityManifest` Schema (Rust + JSON):** An example of the updated DCM schema, including the new `cfschema_version` field and the revised `CybostateFactor` structure [1].
4. **Policy Table Template (Markdown):** A markdown table that codifies the task-class-to-band mapping, serving as a reference for both developers and governance bodies. This template formalizes the policy discussed previously. | Task Class | RoH Band | Duration | HCI Risk | Allowed Actions | | :--- | :--- | :--- | :--- | :--- | | Critical | Green (<0.15) | Short/Long | Low | Driver Onboarding, Zone Policy Changes | | Critical | Any | Medium | High | Not Allowed | | Exploratory | Green/Yellow (<0.25) | Short/Medium | Low/Medium | Simulation, Manifest Drafting | | Exploratory | Red (≥0.25) | Long | High | Not Allowed |

These artifacts collectively form a comprehensive specification. The Rust code provides the executable logic, the DCM schema defines the data contract for devices, and the policy table documents the governing rules. Together, they ensure that the refinement of the OrganicCpuScheduler is not just a theoretical exercise but a practical, implementable enhancement to the Cyconetic Systems platform. This approach directly supports the project's goal of producing reusable schemas, policy templates, and Rust code that embed ethical safety directly into the scheduler’s architecture, paving the way for safer and more reliable cybernetic systems [1].

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