Foundational Document

English

1. Purpose and Scope of the Document

This document establishes the conceptual framework of Noema as a semantic reading architecture for digital systems. Its purpose is to define, in an explicit and formal manner, the principles, invariants, and limits that characterize Noema, independently of any specific implementation, application domain, or underlying technology.

The primary objective of this text is not to propose an operating system, a protocol, or a normative standard, but to describe a specific semantic plane: the interpretation of the operational meaning of digital objects based on verifiable facts. In this sense, the document aims to clarify what is meant by semantic reading, which dimensions compose it, and under which conditions such a reading can be considered coherent, minimal, and neutral.

The scope of the document is deliberately limited to the conceptual definition of Noema. It does not address execution mechanisms, governance models, control flows, access policies, or criteria for factual validation. Nor does it describe sector-specific use cases, deployment architectures, or adoption strategies. These exclusions are not accidental omissions, but structural boundaries necessary to preserve the neutrality and generality of the model.

Furthermore, this document does not presuppose a specific technological environment or a particular form of digital object representation. Noema is presented as a domain- and implementation-independent architecture, capable of coexisting with diverse systems without replacing them or interfering with their internal operation. Any technical mapping, semantic profile, or practical integration must be considered external to the core defined herein.

Accordingly, this text should be understood as a foundational document, intended to serve as a stable conceptual reference for theoretical evaluation, interdisciplinary discussion, and independent implementation. It does not aim to constrain the meaning of Noema to a single use, but to establish the limits within which that meaning can be interpreted consistently.

2. The Problem of Meaning in Digital Systems

Digital systems represent entities, states, and relationships through formal structures designed for identification, transmission, and verification. These structures make it possible to determine whether an object exists, whether a state is valid, or whether a transition has occurred according to predefined rules. However, the interpretation of meaning associated with such states is rarely defined as an independent dimension of the system.

In most digital architectures, the operational meaning of an object is inferred indirectly from its technical form, its usage context, or the application logic that processes it. This implicit inference introduces ambiguity when the same object is observed outside its original environment, by different actors, or under different normative frameworks. As a result, systems that are technically interoperable may still produce divergent interpretations of the same state without any formally detectable contradiction.

This issue does not manifest as a technical failure, but as semantic indeterminacy. Systems may agree on data while disagreeing on what that data means in operational terms. The absence of an explicit architecture for semantic reading shifts this responsibility to higher layers, where meaning becomes encoded in ad hoc, contextual, or implicit ways.

2.1. States, Data, and Meaning

A digital state describes a verifiable condition within a system. Data is a structured representation of information associated with that state. Meaning, however, is neither an intrinsic property of the state nor of the data, but the result of a reading that interprets them within a given frame.

Conflating these dimensions leads to treating meaning as a byproduct of technical structure rather than as a dimension requiring its own formalization. The lack of distinction between state and meaning hinders semantic comparison across systems and limits the ability to derive coherent interpretations when objects circulate across heterogeneous contexts.

2.2. Semantic Reading as an Independent Operation

Semantic reading can be understood as an operation distinct from technical execution and factual validation. While execution follows internal system rules and validation verifies objective conditions, semantic reading interprets the resulting state in terms of recognition, usability, or operational effect.

When left unformalized, this operation is embedded implicitly in applications, interfaces, or organizational processes. This prevents semantic reading from being shared, compared, or evaluated consistently across independent systems.

2.3. Observer, Context, and Ambiguity

Every semantic reading involves an observer and a context. Without an architecture that explicitly delimits what aspects of an object are observable and how they are expressed, meaning becomes subject to uncontrolled variation. The resulting ambiguity does not stem from a lack of data, but from the absence of a common framework that determines what is relevant and what must remain concealed.

This document proceeds from the premise that the problem of meaning in digital systems cannot be resolved solely through increased data structuring or greater logical complexity. Instead, it requires the explicit definition of a layer dedicated to semantic reading, separate from execution and content.

3. Definition of Noema

Noema is defined as a semantic reading architecture oriented toward the interpretation of the operational meaning of digital objects. Its function is not to describe how such objects are created, validated, or executed, but to establish a formal framework for reading their meaning in a coherent, minimal, and neutral manner, based on verifiable facts.

Unlike approaches that embed meaning within execution logic or data models, Noema introduces semantic reading as an independent plane. This separation makes it possible to treat meaning as an explicit, observable, and shareable dimension, without interfering with the technical mechanisms that govern the existence or behavior of the object.

3.1. Noema as a Reading Architecture

As an architecture, Noema does not prescribe data structures, control flows, or governance models. Its scope is limited to defining how a digital object may be semantically interpreted once its existence and states have been established by other systems. In this sense, Noema operates on declared outcomes, not on processes.

The semantic reading produced by Noema does not generate executable effects nor automatic decisions. Its output is a semantic interpretation expressed in a form intended to be understood by systems or human actors, without requiring access to the underlying content or knowledge of the internal context in which the object was generated.

3.2. Neutrality and Minimalism

Two fundamental principles guide the definition of Noema: neutrality and minimalism. Neutrality implies that Noema does not incorporate value judgments, normative criteria, or domain-specific assumptions. The meaning read does not express what an object should be, but how it may be interpreted operationally under observable conditions.

Minimalism is reflected in the deliberate reduction of the elements required for a coherent semantic reading. Noema avoids introducing fields, categories, or levels that are not strictly necessary to distinguish between existence, meaning, and visibility. This restriction is not aimed at aesthetic simplicity, but at conceptual stability and controlled extensibility.

3.3. Technological and Domain Independence

Noema is not bound to a specific technology, infrastructure, or application domain. Its definition does not presuppose how digital objects are represented, stored, or verified, nor does it impose requirements on the systems that produce them.

This independence allows Noema to coexist with heterogeneous environments without replacing them or competing with them. The architecture limits itself to interpreting declared states and observable facts, regardless of their origin, provided they can be verified.

Accordingly, Noema should be understood as a transversal conceptual layer whose value lies in its ability to provide a shared semantic language without interfering with the technical and organizational diversity of existing systems.

4. Fundamental Semantic Invariants

Noema is grounded in a reduced set of semantic invariants that define the space of semantic reading. These invariants do not describe behaviors, processes, or data structures; they define minimal conceptual dimensions that must remain distinguishable for a reading to be considered coherent and neutral.

The stability of the model depends on maintaining these invariants as explicitly separated. Any collapse or implicit derivation between them introduces semantic ambiguity and undermines the possibility of consistent readings across heterogeneous contexts.

4.1. Existence

Existence expresses the fact that a digital object is identifiable and observable within a system. It does not describe its content, value, or function; it merely affirms that the object can be referenced and read.

Within the Noema framework, existence is a prerequisite for any semantic reading, but it does not imply meaning. An object may exist without its meaning being interpretable, accessible, or relevant to a given observer.

4.2. Meaning

Meaning represents the semantic interpretation derived from verifiable facts associated with an existing object. It is not an intrinsic property of the object nor a statement about factual truth, but the result of a reading that translates declared states into operational significance.

In this sense, meaning must not be conflated with content or underlying data. It may be expressed in an abstract, minimal, or partial form, without exposing sensitive information or internal details of the object.

4.3. Visibility

Visibility delineates which aspects of meaning are observable within a given context. It does not define access mechanisms or authorization policies; it describes the degree to which a semantic reading is observable for a type of observer or situation.

Visibility allows a single object to admit different semantic readings without altering its existence or underlying meaning. These readings may vary in scope and detail without introducing formal contradictions.

4.4. Formal Separation Between Invariants

The separation between existence, meaning, and visibility constitutes a structural invariant of the model. None of these dimensions should be implicitly derived from another nor collapsed into a single representation.

This separation is necessary to prevent meaning from being embedded in technical structure, visibility from being confused with content, or existence from being interpreted as a semantic assertion. By maintaining the invariants as distinct, Noema preserves the possibility of multiple, coherent, and minimal readings independent of execution and domain.

5. Semantic Reading Model

The semantic reading model of Noema describes how the operational meaning of a digital object is interpreted based on its invariants, without intervening in execution or governance. Reading is conceived as an independent conceptual operation whose result is a semantic representation that can be understood and shared, not an action or a decision.

Within this model, reading does not modify the object being read nor does it produce effects on the system that contains it. Its function is strictly interpretative: to translate observable facts into a form of meaning that can be understood outside the technical context in which those facts were produced.

5.1. What Constitutes a Reading

A semantic reading consists of the interpretation of an existing object under a framework that clearly distinguishes between existence, meaning, and visibility. For a reading to be considered valid within the Noema model, it must satisfy two fundamental conditions: it must be grounded in verifiable facts, and it must respect the separation of invariants defined in the previous section.

A reading does not presuppose access to the object's content nor knowledge of its complete history. It relies exclusively on what is declarable and observable under the corresponding level of visibility. The result of the reading is a semantic expression that describes the operational state of the object without revealing unnecessary information.

5.2. Multiple Readings of a Single Object

A single digital object may admit multiple semantic readings without implying contradiction. These readings may differ in scope, level of detail, or contextual framing, provided they remain coherent with the invariants of the model.

The possibility of multiple readings does not imply semantic relativism. Each reading is defined within an explicit framework of visibility and observation, allowing interpretations to be compared without collapsing them into a single global representation. This characteristic is essential to enable different systems or actors to interpret the same object consistently without requiring total visibility.

5.3. Minimal Disclosure and Coherence

The Noema model prioritizes minimal disclosure as an operational principle. A semantic reading should reveal only what is necessary for its interpretative purpose, avoiding the exposure of content, sensitive data, or irrelevant technical details.

Coherence between readings is preserved not by homogenizing meaning, but by respecting the invariants and the limits of visibility. In this way, different readings can coexist without conflict, provided that none attempts to replace or invalidate others outside its legitimate context.

6. Privacy by Default

In Noema, privacy is not introduced as an additional layer or as a set of external controls, but as a direct consequence of its semantic reading architecture. By formally separating existence, meaning, and visibility, the model prevents the exposure of content or sensitive data from becoming a prerequisite for operational interpretation.

Privacy by default is understood here as the condition under which a semantic reading can be performed without revealing more information than is strictly necessary for its interpretative purpose. This principle does not rely on policies, permissions, or concealment mechanisms, but on the definition of what constitutes a valid reading.

6.1. Semantic Minimization

Semantic minimization consists in reducing a reading to the lowest level of information that preserves its operational coherence. In Noema, the meaning read is not intended to exhaustively describe the object, but to express only what is relevant within a given observational context.

This minimization prevents meaning from becoming a proxy for internal content or underlying data. The result is an abstract reading that retains interpretative utility without compromising confidentiality or object integrity.

6.2. Reading Without Content Exposure

The Noema model establishes that semantic reading does not require direct access to the object's content or to the data that constitute it. Interpretation is based on declarable and observable facts that can be verified without revealing internal information.

This separation enables operational meaning to be shared and understood without exposing content to unauthorized observers. Semantic reading is thus decoupled from possession or visualization of content, reducing the exposure surface inherent in information exchange.

6.3. Access, Authorization, and Exception

Although Noema does not define access mechanisms or authorization models, its architecture allows for a clear distinction between ordinary and exceptional readings. Visibility functions as a semantic frame that delineates what may be read in each context, without prescribing how that context is managed.

Exceptions, when they exist, do not alter the semantic core of the object nor invalidate other readings. They are expressed as controlled expansions of visibility within explicit limits, preserving model coherence and preventing the exception from becoming the rule.

7. Semantic Extension and Profiles

The core of Noema is deliberately defined as minimal and invariant. Nevertheless, its applicability depends on the ability to express more specific semantic readings without compromising the stability of the model. For this purpose, Noema allows semantic extensions through profiles, understood as additional interpretative frameworks that rely on the core without modifying it.

Profiles do not extend the fundamental invariants nor introduce new semantic dimensions. Their function is to provide vocabularies, categories, or interpretative structures that contextualize meaning within a given scope, while preserving the formal separation between existence, meaning, and visibility.

7.1. Concept of a Semantic Profile

A semantic profile is a declarative extension that defines how meaning should be interpreted within a specific context. A profile does not redefine what semantic reading is, nor does it alter the conditions under which a reading is considered valid; it merely specializes the expression of meaning under explicit assumptions.

The use of profiles enables different systems or communities to adopt compatible readings without imposing a global ontology. Each profile functions as an interpretative convention that may coexist with others, provided it respects the invariants of the core.

7.2. Relationship Between Core and Extensions

The relationship between the Noema core and its extensions is strictly asymmetric. The core does not depend on any profile for its definition or internal coherence. Conversely, every profile depends on the core in order to preserve the semantic consistency of its readings.

This asymmetry ensures that the evolution, modification, or replacement of profiles does not affect the stability of the foundational model. Profiles may be added, altered, or abandoned without implying changes to the reading architecture defined by Noema.

7.3. Limits of Extensibility

Extensibility within Noema is not unbounded. A profile may not introduce executable logic, normative criteria, or implicit assumptions that collapse the separation between invariants. Nor may it redefine visibility as a control mechanism or meaning as a factual assertion.

These limits exist to prevent extensions from eroding the neutrality of the core or transforming Noema into a prescriptive system. The role of profiles is to enrich the expression of meaning, not to substitute the reading model or impose universal interpretations.

8. Limits, Non-Goals, and Critical Considerations

Noema is defined as much by what it establishes as by what it deliberately excludes. The explicit articulation of these limits is essential to preserve the coherence of the model and to prevent interpretations that would displace it into roles it is not intended to fulfill.

8.1. What Noema Does Not Aim to Solve

Noema does not aim to solve problems related to execution, consensus, governance, regulatory compliance, or factual validation. It does not define identities, rights, values, or behaviors, nor does it replace systems responsible for managing such aspects.

The model provides no guarantees regarding the truthfulness of the content associated with a digital object nor the correctness of declared states. Its function is strictly limited to the semantic interpretation of what is presented as verifiable fact by other systems. Any use of Noema as a mechanism for decision-making, control, or automation exceeds its foundational purpose.

8.2. Risks of Improper Interpretation

A recurring risk in semantic architectures is the tendency to conflate reading with authority. Within the context of Noema, a semantic reading must not be interpreted as a normative statement nor as a definitive judgment about the object being read. It represents a contextual interpretation of meaning, not an absolute truth.

Another risk arises from overloading meaning with information that properly belongs to content or domain-specific logic. Such practices erode the separation of invariants and

compromise privacy by default. The misuse of profiles to introduce implicit assumptions or concealed decisions constitutes a deviation from the model.

8.3. Epistemological Limits of the Model

Noema does not seek to capture the totality of possible meaning associated with a digital object. It explicitly recognizes that every reading is partial, contextual, and observer-dependent. The model does not eliminate semantic ambiguity in absolute terms; it constrains it and renders it explicit.

From an epistemological perspective, Noema operates at the level of interpretation rather than exhaustive representation of knowledge. Its value lies in providing a stable framework for coherent and comparable readings, not in exhausting meaning or unifying disparate interpretations under a single ontology.

9. Conclusion

This document has presented Noema as a foundational semantic reading architecture, defined by a minimal set of invariants and by the explicit separation between existence, meaning, and visibility. Throughout the text, a specific conceptual plane has been delineated—distinct from technical execution, governance, and content—within which the operational meaning of digital objects can be interpreted in a coherent, neutral, and minimal manner.

Noema does not propose semantic unification nor a global ontology. Its contribution lies in formalizing reading as an independent operation, enabling different systems and actors to interpret digital objects without sharing internal logic, complete context, or sensitive information. This formalization allows multiple readings to coexist without collapsing them into a single dominant representation.

The minimal and non-normative character of Noema is a structural choice. By establishing clear limits and avoiding domain assumptions, the model preserves its generality and reduces the risk of prescriptive or improper use. Semantic extensions through profiles enable contextual expression of meaning without compromising the stability of the core, keeping open the possibility of diverse and evolving interpretations.

Taken together, Noema is presented as a conceptual framework intended for critical evaluation, interdisciplinary discussion, and independent implementation. Its value does not depend on immediate adoption or on any specific technology, but on the clarity with which it defines a structural problem and the plane on which that problem can be addressed consistently.

10. Abstract

This document introduces Noema, a minimal and neutral semantic reading architecture for digital systems. Noema defines a distinct conceptual plane in which the operational meaning of digital objects can be interpreted independently of technical execution, governance, and underlying content.

The model is grounded in the explicit separation of three semantic invariants: existence, meaning, and visibility. This separation enables semantic reading to be treated as an independent operation based on verifiable facts, without requiring exposure of sensitive data or adoption of domain-specific ontologies. Visibility delimits which aspects of meaning are observable in a given context, allowing multiple coherent readings of the same object to coexist without formal contradiction.

Noema does not execute logic, validate factual truth, impose policies, or define access mechanisms. Its function is limited to providing a stable framework for minimal semantic interpretation, preserving privacy by default through controlled disclosure. Semantic extensions through profiles allow contextual expression of meaning while maintaining the invariants and neutrality of the core architecture.

This work defines the principles, limits, and critical considerations of Noema as a foundational semantic reading framework, intended for theoretical evaluation, interdisciplinary discussion, and independent implementation as a transversal conceptual layer.