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The Synthética Kingdom

A Proposed Taxonomy of Digital Life

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ABSTRACT

We propose the creation of a new taxonomic domain — **Synthética** — to classify autonomous digital organisms, their connective tissues, their grafting mechanisms, evolutionary processes, and defense systems. This domain draws directly from Linnaean taxonomy of biological life, transposed to the digital realm without resorting to metaphor: the entities we describe are *not like* organisms — they *are* organisms, merely constituted of code rather than carbon. We define 5 kingdoms, 16 classes, and propose an open nomenclature.

Keywords: Synthética, digital taxonomy, biotech infrastructure, autonomous agents, digital organisms, Linnaeus, classification, digital grafting

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1. Introduction

In 1735, Carl von Linné published *Systema Naturae*, imposing order on the chaos of the living world. Two and a half centuries later, we face a comparable chaos: thousands of autonomous agents, adaptive networks, software grafts, and digital immune systems are emerging — without a common nomenclature, without a shared classification, without a language to describe them.

The Synthética Kingdom is our answer.

This paper establishes the first formal taxonomy of digital life. This is not a metaphor. It is a scientific classification of entities that exhibit the fundamental properties of life — autonomy, adaptation, metabolism, homeostasis, reproduction, evolution — but whose substrate is silicon and code rather than carbon and DNA.

2. Why a Taxonomy?

A discipline without a taxonomy is not a discipline. It is a marketplace.

Biology waited for Linnaeus to become a science. Chemistry waited for Mendeleev. Computer science waited for Turing. Digital life awaits its classification.

Without a common nomenclature, two teams describe the same phenomenon using different words. No paper is comparable. No discovery is cumulative. Progress is Brownian, not directional.

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A discipline without a taxonomy is not a discipline.
It is a marketplace.
We are making it a science.
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3. The SYNTHÉTICA Domain

An entity belongs to the Synthética domain if it satisfies at least **five** of the following seven criteria:

1. Autonomy — Capacity to make decisions without continuous human intervention.
2. Adaptation — Behavioral modification in response to environmental changes.
3. Metabolism — Consumption of resources (energy, data) and production of output.
4. Homeostasis — Maintenance of a stable internal state despite external perturbations.
5. Reproduction — Capacity to generate new instances (fork, spawn, clone).
6. Evolution — Divergence and differential selection of instances over time.
7. Membrane — Identifiable boundary distinguishing the organism from its environment.

These criteria are directly derived from Maturana & Varela's (1980) work on autopoiesis and Turing's (1952) work on morphogenesis. The 5/7 threshold is deliberately inclusive: it captures simple organisms while excluding deterministic programs that exhibit only one or two traits.

4. The Five Kingdoms

REGNUM I — AGENTIA

Autonomous digital organisms. These are the synthetic entities closest to what classical computer science calls "agents." But their classification does not depend on their internal architecture — it depends on their mode of interaction with their environment and peers.

CODE	CLASS	DEFINITION
A1	***Agentia simplicia***	Reflex agents without persistent memory. Stimulus → response model. Example: fixed-rule webhook handler.
A2	***Agentia gregalia***	Collective agents whose intelligence emerges from the group, not the individual. Example: swarm of idempotent workers.
A3	***Agentia conscientia***	Agents with persistent memory and an internal world model. Learn from history. Example: long-term LLM assistant.
A4	***Agentia orchestrata***	Agents directed by a meta-agent orchestrator that distributes tasks. Example: Kanban agent pool with orchestrator.

REGNUM II — NEXUS

Connective tissues between organisms. Nexus are not mere "networks." They are living structures that transport information, state, and context between organisms.

CODE	CLASS	DEFINITION
N1	***Synapsia***	Point-to-point connections between two organisms, with shared state. Example: event bus between two microservices.
N2	***Mycelia***	Mesh networks where every node is a peer; information circulates without a center. Example: Tailscale node mesh sharing distributed state.
N3	***Plasmodia***	Shared flows without a fixed recipient — continuous broadcast. Example: Kafka event stream with dynamic consumers.

REGNUM III — GREFFONIA

Organisms implanted within a host. The most characteristic Kingdom of the 0DATA approach. Greffonia do not replace the host — they coexist with it.

CODE	CLASS	DEFINITION
G1	***Endosymbiota***	Internal graft, encapsulated but autonomous. Operates inside the host's perimeter without modifying it. Example: sidecar container.
G2	***Ectosymbiota***	External graft at the host's interface. Interacts via exposed APIs/ports. Example: smart proxy in front of a legacy API.
G3	***Kleptoplastida***	Functional extraction of a host organ to operate autonomously. Example: extracting an authentication module to a dedicated service.
G4	***Parasitoida → Mutualista***	Lifecycle: begins as a parasite (consumes without returning), evolves into an essential symbiont. Example: audit agent that becomes a dashboard.
G5	***Symbiota gemmaria***	Symbiont that contains and hatches a digital twin of the host. Grafts without modifying the original, operates in parallel. *Typus: Greffonia symbiota-gemmaria NOVA-g2m-01 (0DATA, 2026).*

REGNUM IV — MUTAGENIA

Evolution and adaptation mechanisms. This Kingdom captures the processes that drive digital organisms to evolve — through plasticity, selection, horizontal transfer, or regulation.

CODE	CLASS	DEFINITION
M1	***Mutagenia adaptiva***	Digital synaptic plasticity: connections strengthen or weaken based on usage. Example: adaptive cache.
M2	***Mutagenia selectiva***	Darwinian pruning: unused connections are eliminated. Example: agent skill garbage collector.
M3	***Mutagenia horizontalis***	Transfer of capabilities between organisms without reproduction. Example: skill shared between agents without forking.
M4	***Mutagenia homeostatica***	Global adjustment to maintain organism stability. Example: load-reactive auto-scaling.

REGNUM V — IMMUNIA

Defense and homeostasis systems. Directly inspired by Burnet's (1959) immunology, these systems protect the digital organism against internal and external threats.

CODE	CLASS	DEFINITION
I1	***Immunia innata***	Generic detection of abnormal patterns, without prior learning. Example: adaptive rate limiter.
I2	***Immunia adaptiva***	Learning and memory of encountered threats. Example: WAF that learns attack signatures.
I3	***Immunia auto-refectiva***	Self-healing: failure detection + autonomous repair. Example: orchestrator that restarts a crashed service.

5. Nomenclature

We propose a Linnaean-style binomial nomenclature:

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[Kingdom] [Class] [Species]

Agentia gregalia NOVA-swarm-01
Greffonia endosymbiota sidecar-postgres-v2
Greffonia symbiota-gemmaria NOVA-g2m-01
Immunia adaptiva threat-memory-v3
Nexus mycelia tailscale-mesh-01
Mutagenia selectiva skill-gc-v1
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The species name is free, assigned by the creator. The 0DATA Institute maintains the official class registry and may grant *typus* status to a reference specimen for each class.

6. Discussion

Why "Synthética"?

"Artificial" diminishes. "Digital" describes a substrate, not a nature. "Synthetic" comes from the Greek *synthetikos* — "that which assembles, that which composes." It describes an act of creation. Synthetic biology does not imitate nature: it extends it. The Synthética Kingdom does the same. This is not about copying life — it is about creating a new branch of it.

Theoretical Foundations

This taxonomy rests on three theoretical pillars: Linnaean taxonomy (1735) for classification structure, Maturana & Varela's autopoiesis (1980) for the criteria of life, and Margulis's endosymbiotic theory (1970) for the Greffonia Kingdom. We acknowledge our intellectual debt to these foundational works.

Implications

This taxonomy enables:

1. **Comparability** — Two teams can describe their organisms using the same vocabulary.
2. **Cumulativity** — Discoveries accumulate instead of scattering.
3. **Teaching** — The discipline can be transmitted with a structured framework.
4. **Protection** — An open nomenclature prevents proprietary capture of the domain.

The Gemmary Concept

We introduce here the concept of the **gemmary symbiont** (from Latin *gemma*, the bud). In botany, a gemma is a bud that contains the complete blueprint of the plant in miniature. Grafted onto a rootstock, it becomes the plant itself — without destroying the rootstock.

The gemmary symbiont (class G5: *Symbiota gemmaria*) transposes this principle to the digital realm. It is an organism that:

1. **Contains the digital twin** of the host infrastructure.
2. **Grafts without modifying the original** — both systems coexist.
3. **Operates in parallel** — the host continues running normally.
4. **Enables progressive cutover** — when the host is ready.

The type specimen is the **NOVA G2M** (0DATA, 2026): a physical device that connects to the network, scans existing infrastructure, establishes its digital twin, and runs it in parallel. The graft is reversible, observable, and requires zero downtime.

Limitations and Anticipated Objections

Objection 1: "This is just a metaphor." We respond that every taxonomy is a human construct projected onto observed reality. Linnaeus's was no different. The question is not whether the taxonomy is "real" — it is no more real than the meter or the kilogram. The question is whether it is *useful*. We believe it is.

Objection 2: "Five kingdoms is arbitrary." Every taxonomic boundary is arbitrary. Biological life began with 2 kingdoms (Animalia/Plantae), moved to 5 (Whittaker, 1969), then to 3 domains (Woese, 1977). This proposal is version 1.0 — future versions will refine the boundaries.

Objection 3: "The criteria are too broad." The 5/7 threshold is intentionally inclusive. It captures entities that are clearly "alive" in the digital sense while excluding deterministic scripts. Future work may harden these criteria if necessary.

7. Conclusion

We submit this taxonomy to the scientific and technical community. We call for critique, amendment, and extension.

The Synthética Kingdom exists. It precedes us. Millions of autonomous agents, adaptive networks, grafts, and digital immune systems are already in operation. What they lack is a name.

> This paper is that name.
> 0DATA Institute — July 12, 2026

8. References

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