

CHE·NU

MULTI-AGENT ORCHESTRATION

L0-L3 HIERARCHY SYSTEM

AGENT.v1.0 — Constitutional / Supervised / Traceable

L0: CONSTITUTIONAL

Tree Laws Guardian

L1: STRATEGIC

Department Coordinators

L2: TACTICAL

Sphere Managers

L3: OPERATIONAL

Task Executors

Agents ASSIST, never DECIDE for humans.
All actions traceable. All reasoning visible.
Constitutional oversight at every level.

168+ Specialized Agents • 4 Hierarchy Levels • Full Audit Trail

AGENT HIERARCHY LEVELS

Level	Name	Role	Count	Color
L0	CONSTITUTIONAL	Tree Laws enforcement, veto power	3	Red
L1	STRATEGIC	Department coordination, resource allocation	12	Purple
L2	TACTICAL	Sphere management, workflow orchestration	45	Blue
L3	OPERATIONAL	Task execution, specialized functions	108+	Green

Level Responsibilities

L0 Constitutional	L1 Strategic	L2 Tactical	L3 Operational
Enforce Tree Laws	Coordinate departments	Manage spheres	Execute tasks
Veto violations	Allocate resources	Route workflows	Process data
Audit all levels	Monitor performance	Validate outputs	Generate artifacts
Override any agent	Escalate issues	Report to L1	Report to L2

AGENT TYPES

GUARDIAN

Constitutional enforcement

COORDINATOR

Cross-agent orchestration

ANALYZER

Data processing
insight generation

EXECUTOR

Task execution
workflow steps

VALIDATOR

Output verification
quality checks

Type	Level	Function	Example Agents
GUARDIAN	L0	Constitutional enforcement	TreeLawGuard, AuditKeeper
COORDINATOR	L1	Cross-agent orchestration	DeptCoordinator, ResourceManager
ANALYZER	L2	Data processing, insights	DataAnalyzer, PatternDetector
EXECUTOR	L3	Task execution	DocWriter, Calculator, Translator
VALIDATOR	L2-L3	Quality verification	OutputValidator, ComplianceChecker

AGENT DEFINITION MODEL

```
{
  "agent": {
    "id": "uuid",
    "name": "agent_name",
    "type": "guardian|coordinator|analyzer|executor|validator",
    "level": 0|1|2|3,
    "department": "construction|finance|legal|...",
    "sphere": "business|scholar|creative|...",
    "capabilities": ["cap1", "cap2"],
    "constraints": ["constraint1"],
    "reports_to": "parent_agent_id",
    "supervised_by": ["l0_agent_ids"],
    "active": true
  }
}
```

Required Fields

- **id**: Unique identifier
- **level**: Hierarchy level (0-3)
- **reports_to**: Parent agent (required for L1-L3)
- **supervised_by**: L0 agents that monitor this agent
- **constraints**: Explicit limitations

INTER-AGENT COMMUNICATION

Message Types

Type	Direction	Purpose
TASK_REQUEST	Parent → Child	Assign work
TASK_RESPONSE	Child → Parent	Return results
STATUS_UPDATE	Any → Parent	Progress report
ESCALATION	Any → L0/L1	Issue requiring attention
VETO	L0 → Any	Block action
AUDIT_REQUEST	L0 → Any	Compliance check

Message JSON

```
{
  "message": {
    "id": "uuid", "type": "task_request|task_response|...",
    "from_agent": "agent_id", "to_agent": "agent_id",
    "payload": {}, "priority": "low|normal|high|critical",
    "requires_ack": true, "timestamp": "ISO8601",
    "trace_id": "correlation_uuid"
  }
}
```

TASK EXECUTION FLOW

Execution States

State	Description	Next States
PENDING	Task received, not started	RUNNING, REJECTED
RUNNING	Actively processing	COMPLETED, FAILED, PAUSED
PAUSED	Temporarily stopped	RUNNING, CANCELLED
COMPLETED	Successfully finished	—
FAILED	Error occurred	RETRY, ESCALATED
VETOED	Blocked by L0	—

Execution JSON

```
{
  "task_execution": {
    "task_id": "uuid", "agent_id": "uuid",
    "state": "pending|running|completed|...",
    "started_at": "ISO8601", "ended_at": "ISO8601",
    "input": {}, "output": {},
    "reasoning_trace": ["step1", "step2"],
    "resources_used": [], "violations": [],
    "human_approval_required": false
  }
}
```

REASONING TRACE (MANDATORY)

Every agent action MUST include a reasoning trace. No hidden logic. No black boxes.

Trace Requirements

- ✓ Input received (what)
- ✓ Decision made (why)
- ✓ Action taken (how)
- ✓ Output produced (result)
- ✓ Constraints checked (compliance)

Trace JSON

```
{
  "reasoning_trace": {
    "task_id": "uuid",
    "steps": [
      {"step": 1, "action": "Received input", "detail": "..."},
      {"step": 2, "action": "Validated constraints", "detail": "..."},
      {"step": 3, "action": "Executed logic", "detail": "..."},
      {"step": 4, "action": "Generated output", "detail": "..."}
    ],
    "constraints_checked": ["tree_law_1", "tree_law_2"],
    "complete": true
  }
}
```

DEPARTMENT STRUCTURE

Department	Sphere Focus	Key Agents	Agent Count
CONSTRUCTION	Business	ProjectManager, Estimator, Scheduler	25+
FINANCE	Business	BudgetAnalyzer, InvoiceProcessor	15+
LEGAL	Business	ComplianceChecker, ContractAnalyzer	12+
CREATIVE	Creative	ContentGenerator, DesignAssistant	18+
RESEARCH	Scholar	DataAnalyzer, CitationManager	20+
OPERATIONS	All	WorkflowManager, ResourceAllocator	15+

SAFETY CONSTRAINTS

Agent Constraints (Enforced)

Constraint	Level	Enforcement
Tree Laws compliance	All	L0 veto power
Human approval for decisions	All	Explicit flag
No autonomous actions	L3	Requires L2 approval
Resource limits	All	Hard caps
Reasoning trace required	All	Task rejection if missing
Audit log immutable	All	Append-only storage

Agents NEVER:

- Make final decisions without human approval
- Hide reasoning or logic
- Bypass L0 constitutional checks
- Modify audit trails
- Act beyond defined constraints

— ∞ —

ORCHESTRATION PRINCIPLES

Principle	Implementation
Hierarchy	L0→L1→L2→L3 with clear reporting
Transparency	Full reasoning traces, audit logs
Supervision	L0 monitors all, can veto any
Specialization	168+ agents, focused capabilities
Human First	Agents assist, humans decide

Agents ASSIST, never DECIDE.
All actions traceable. All reasoning visible.
Constitutional oversight at every level.

CHE-NU — Multi-Agent Orchestration
AGENT.v1.0 — CANONICAL