3P3 ONTOLOGY BLUEPRINT: PHO COMPLETE IMPLEMENTATION

The Definitive Technical Specification for Phone Call Management Process

Version 1.0 - September 2025 - KOOL TOOL SRL

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1. FOUNDATIONAL ONTOLOGY

1.1 The Core Equation: Attribute = Elementary Process

In 3P3 ontology, every attribute IS an elementary process following the IPO model:

```
ATTRIBUTE = ELEMENTARY PROCESS
├── INPUT (Meta-attributes as resources)
├── PROCESS (User/system action as trigger)
└── OUTPUT (Specialized value as result)
```

Practical Example: "caller_name" Attribute

```json

```

```json
{
  "attribute": "caller_name",
  "as_process": {
    "INPUT": {
      "resources": ["validation_rules", "format_constraints", "historical_data"],
      "meta_attributes": ["10_domains_configuration"]
    },
    "PROCESS": {
      "trigger": "user_input_or_system_sync",
      "transformation": "validate_format_store",
      "orchestration": "through_10_domains"
    },
    "OUTPUT": {
      "value": "Mario Rossi - Boutique Milano",
      "state": "validated_encrypted_synced",
      "side_effects": ["crm_updated", "history_logged", "ml_trained"]
    }
  }
}
```
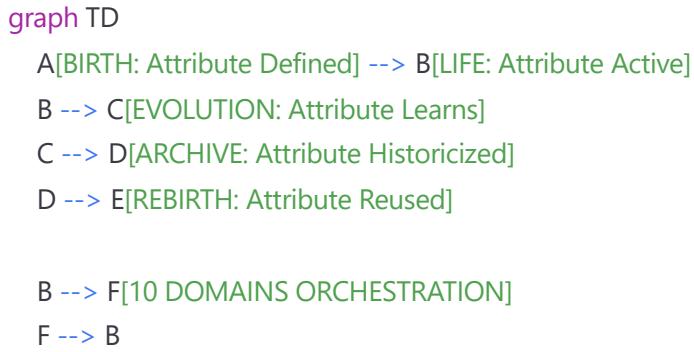
1.2 The 10 Domains as Behavioral Patterns

Each domain defines HOW the attribute-process behaves:

Domain	Behavior	PHO Implementation
IDENTITY	Who I am	Unique identifier in call context
TEMPORAL	When I exist	Versioning of call data
AUTHORIZATION	Who controls me	Role-based access
COMMUNICATION	How I speak	API/sync protocols
TRIGGER	What I activate	Automated actions
DOCUMENT	What I link	Related documents
MATERIAL	My limits	Data constraints
PERFORMANCE	How I measure	KPIs and metrics
SECURITY	How I protect	Encryption/GDPR
EVOLUTION	How I improve	ML optimization

1.3 Information Lifecycle Management

mermaid

```
graph TD
    A[BIRTH: Attribute Defined] --> B[LIFE: Attribute Active]
    B --> C[EVOLUTION: Attribute Learns]
    C --> D[ARCHIVE: Attribute Historicized]
    D --> E[REBIRTH: Attribute Reused]

    B --> F[10 DOMAINS ORCHESTRATION]
    F --> B
```

2. SYSTEM ARCHITECTURE

2.1 Three-Table Universe

CMP (Components) - The Catalog

```sql
CREATE TABLE CMP (
    id SERIAL PRIMARY KEY,
    dna_code VARCHAR(12) UNIQUE,    -- PHO250001
    template_id VARCHAR(50),        -- PHO_TEMPLATE_V1
    template_json JSONB,            -- Complete template definition
    instance_json JSONB,            -- Instance data
    attribute_metadata JSONB,       -- 10 domains for each attribute
    created_at TIMESTAMP,
    created_by VARCHAR(50),
    version INTEGER
);
```

ETY (Entity) - The Orchestrator

```sql
CREATE TABLE ETY (
    id SERIAL PRIMARY KEY,
    entity_id VARCHAR(12) UNIQUE,   -- PHO250001
    process_type VARCHAR(3),        -- PHO
    workflow_state VARCHAR(50),     -- IN_PROGRESS
    workflow_json JSONB,            -- State machine definition
    responsible VARCHAR(50),
    controller VARCHAR(50),
    started_at TIMESTAMP,
    completed_at TIMESTAMP
);
```

LOG (Actions) - The Immutable History

```sql
CREATE TABLE LOG (
    id SERIAL PRIMARY KEY,
    log_id UUID DEFAULT gen_random_uuid(),
    entity_id VARCHAR(12),
    log_level VARCHAR(20),      -- L1_PROCESS, L2_ACTIVITY, L3_ATOMIC
    action VARCHAR(100),
    actor VARCHAR(50),
    timestamp TIMESTAMP DEFAULT NOW(),
    changes JSONB,              -- Detailed change record
    metadata JSONB             -- Context and additional info
);
```

2.2 LOG Granularity Specification

Three-Level Hierarchy

```json
```

```json
{
  "log_levels": {
    "L1_PROCESS": {
      "description": "Major lifecycle events",
      "frequency": "low",
      "examples": ["process_created", "process_completed", "process_archived"],
      "data_captured": {
        "process_id": "PHO250001",
        "template_version": "V1",
        "total_duration": 240,
        "k_coefficient": 1.35
      }
    },
    "L2_ACTIVITY": {
      "description": "Workflow transitions and significant actions",
      "frequency": "medium",
      "examples": ["status_change", "assignment_change", "approval_given"],
      "data_captured": {
        "from_state": "NEW",
        "to_state": "IN_PROGRESS",
        "transition_reason": "call_started",
        "responsible_user": "USR_SARA"
      }
    },
    "L3_ATOMIC": {
      "description": "Every attribute modification",
      "frequency": "high",
      "examples": ["field_updated", "validation_failed", "auto_correction"],
      "data_captured": {
        "attribute": "caller_name",
        "old_value": "Rossi",
        "new_value": "Mario Rossi",
        "change_reason": "user_enrichment",
        "timestamp_precise": "2025-09-17T09:16:23.456Z"
      }
    }
  }
}
```

2.3 LOG to RAP (Report) Transformation

Automatic Daily Activity Report Generation

```
json
```

```json
{
  "rap_configuration": {
    "source": "LOG",
    "transformation_rules": {
      "daily_user_activity": {
        "filter": "WHERE actor = :user AND date = :today",
        "aggregate": [
          "COUNT(*) as total_actions",
          "COUNT(DISTINCT entity_id) as processes_touched",
          "AVG(duration) as avg_process_time",
          "SUM(CASE WHEN outcome = 'INTERESTED' THEN 1 ELSE 0 END) as conversions"
        ],
        "output_format": "PDF",
        "delivery": "email_at_18:00"
      },
      "process_efficiency": {
        "group_by": "process_type",
        "metrics": ["k_coefficient", "cycle_time", "error_rate"],
        "visualization": "dashboard_widget"
      }
    }
  }
}
```

3. PHO PROCESS COMPLETE SPECIFICATION

3.1 Process Definition

```json
json

{
  "process": {
    "code": "PHO",
    "name": "Phone Call Management",
    "description": "Manages inbound and outbound customer phone calls",
    "version": "1.0",
    "family": "COMMUNICATION",
    "standard_duration": 300,
    "k_target": 1.5,
    "business_value": "high",
    "frequency": "50-100/day"
  }
}
```

3.2 The 5 Specific Attributes

3.2.1 CALLER_NAME Attribute - Complete 10 Domains Configuration

```json
```

3.2.1 CALLER_NAME Attribute - Complete 10 Domains Configuration

```json
```

```json
{
  "attribute": "caller_name",
  "data_type": "string",
  "required": true,
  "domains": {
    "1_IDENTITY": {
      "code": "PHO_ATTR_001",
      "display_name": "Caller Name",
      "description": "Person or company identification",
      "searchable": true,
      "unique_in_context": false,
      "dna_component": "PHO.COMM.001"
    },
    "2_TEMPORAL": {
      "versioning": true,
      "historical_depth": "FULL",
      "retention_days": 2555,
      "track_changes": {
        "what": true,
        "who": true,
        "when": true,
        "why": true
      },
      "temporal_validity": {
        "valid_from": "call_start",
        "valid_until": "archived"
      }
    },
    "3_AUTHORIZATION": {
      "permissions": {
        "sales": {"read": true, "write": true, "delete": false},
        "production": {"read": true, "write": false, "delete": false},
        "finance": {"read": false, "write": false, "delete": false},
        "admin": {"read": true, "write": true, "delete": true}
      },
      "special_rules": {
        "mask_in_reports": false,
        "require_approval_for_change": false,
        "audit_all_access": true
      }
    },
    "4_COMMUNICATION": {
      "api_mapping": {
        "rest": "customer_name",
        "graphql": "customerIdentity.fullName",
        "soap": "CUST_NAME"
```

```json
    },
    "export_formats": {
      "csv": "Cliente",
      "json": "customer_name",
      "xml": "<CustomerName>"
    },
    "sync_systems": [
      {
        "system": "CRM_SALESFORCE",
        "field": "Contact.Name",
        "bidirectional": true,
        "sync_frequency": "realtime"
      },
      {
        "system": "ERP_SAP",
        "field": "KUNNR_NAME",
        "bidirectional": false,
        "sync_frequency": "batch_hourly"
      }
    ]
  },
  "5_TRIGGER": {
    "on_create": [
      {
        "condition": "value != null",
        "action": "search_customer_history",
        "async": true
      }
    ],
    "on_change": [
      {
        "condition": "old_value != new_value",
        "action": "update_all_related_processes",
        "scope": "all_open_processes"
      },
      {
        "condition": "contains('VIP')",
        "action": "alert_management",
        "priority": "high",
        "notification": "immediate"
      }
    ],
    "on_validate": [
      {
        "condition": "length < 2",
        "action": "validation_error",
        "message": "Name too short"
```

```json
      }
    ]
  },
  "6_DOCUMENT": {
    "auto_attach": {
      "contracts": {
        "match_by": "customer_name",
        "last_n": 3,
        "file_types": ["pdf", "docx"]
      },
      "correspondence": {
        "match_by": "email_domain",
        "date_range": "last_6_months"
      }
    },
    "generate_on_complete": {
      "call_summary": {
        "template": "call_summary_template.docx",
        "format": "pdf",
        "storage": "gdrive://calls/{date}/{caller_name}"
      }
    },
    "link_to_existing": {
      "search_in": ["contracts", "quotes", "invoices"],
      "match_algorithm": "fuzzy",
      "confidence_threshold": 0.85
    }
  },
  "7_MATERIAL": {
    "data_type": "string",
    "constraints": {
      "min_length": 2,
      "max_length": 100,
      "pattern": "^[A-Za-zÀ-ÿ\\s\\-\\.\\,]+$",
      "encoding": "UTF-8"
    },
    "storage": {
      "bytes_allocated": 200,
      "compression": false,
      "encryption": true
    },
    "performance": {
      "indexed": true,
      "cached": true,
      "lazy_load": false
    }
  },
```

```json
    "8_PERFORMANCE": {
      "metrics": {
        "input_time": {
          "target_seconds": 5,
          "warning_threshold": 10,
          "measure": true
        },
        "accuracy": {
          "error_rate_target": 0.02,
          "validation_rules": ["not_empty", "proper_format"]
        },
        "corrections_frequency": {
          "track": true,
          "alert_threshold": 3
        }
      },
      "k_contribution": {
        "weight": 0.15,
        "factors": {
          "corrections": "negative",
          "speed": "positive",
          "completeness": "positive"
        }
      }
    },
    "9_SECURITY": {
      "classification": "PII",
      "encryption": {
        "at_rest": "AES-256",
        "in_transit": "TLS-1.3",
        "key_rotation": "90_days"
      },
      "compliance": {
        "GDPR": {
          "is_personal_data": true,
          "lawful_basis": "legitimate_interest",
          "retention_period": "7_years",
          "right_to_deletion": true,
          "portability": true
        }
      },
      "audit": {
        "log_all_access": true,
        "log_all_changes": true,
        "suspicious_patterns": ["bulk_export", "after_hours_access"],
        "alert_security_team": true
      }
```

```json
      },
      "10_EVOLUTION": {
        "machine_learning": {
          "auto_complete": {
            "enabled": true,
            "algorithm": "frecency",
            "min_chars": 3,
            "max_suggestions": 5,
            "learn_from_corrections": true
          },
          "pattern_detection": {
            "identify_duplicates": true,
            "suggest_merge": true,
            "confidence_threshold": 0.85
          },
          "anomaly_detection": {
            "unusual_values": true,
            "statistical_outliers": true,
            "alert_on_anomaly": true
          }
        },
        "continuous_improvement": {
          "collect_feedback": true,
          "track_corrections": true,
          "optimize_suggestions": true,
          "update_frequency": "weekly"
        }
      }
    }
  }
}
```

3.2.2 PHONE_NUMBER Attribute - Complete 10 Domains

```json

```

```json
{
  "attribute": "phone_number",
  "data_type": "string",
  "required": true,
  "domains": {
    "1_IDENTITY": {
      "code": "PHO_ATTR_002",
      "display_name": "Phone Number",
      "description": "Contact telephone number",
      "searchable": true,
      "unique_in_context": false,
      "dna_component": "PHO.COMM.002"
    },
    "2_TEMPORAL": {
      "versioning": true,
      "historical_depth": "LAST_10",
      "retention_days": 2555
    },
    "3_AUTHORIZATION": {
      "permissions": {
        "sales": {"read": true, "write": true, "delete": false},
        "all_others": {"read": false, "write": false, "delete": false}
      }
    },
    "4_COMMUNICATION": {
      "api_field_name": "contact_phone",
      "export_formats": ["E164", "NATIONAL", "INTERNATIONAL"],
      "import_validation": "clean_and_validate_phone",
      "sync_with": [
        {"system": "CRM", "field": "phone"},
        {"system": "WhatsApp", "field": "number"},
        {"system": "SMS_Gateway", "field": "recipient"}
      ]
    },
    "5_TRIGGER": {
      "on_create": [
        {
          "condition": "is_valid_number",
          "action": "lookup_carrier_info"
        },
        {
          "condition": "is_mobile",
          "action": "enable_whatsapp_option"
        }
      ]
    },
```

```json
      "6_DOCUMENT": {
        "auto_generate": {
          "vcard": true,
          "qr_code": true
        }
      },
      "7_MATERIAL": {
        "constraints": {
          "pattern": "^\\+?[1-9]\\d{1,14}$",
          "max_length": 20
        },
        "storage": {
          "format": "E164",
          "indexed": true
        }
      },
      "8_PERFORMANCE": {
        "validation_time_target": 0.5,
        "lookup_cache": true
      },
      "9_SECURITY": {
        "classification": "PII",
        "mask_in_logs": true,
        "encryption": {
          "at_rest": true,
          "show_last_4_digits": true
        }
      },
      "10_EVOLUTION": {
        "auto_format": true,
        "learn_patterns": true,
        "suggest_country_code": true
      }
    }
  }
```

3.2.3 DURATION Attribute - Complete 10 Domains

```json
json
```

```json
{
  "attribute": "duration",
  "data_type": "integer",
  "required": true,
  "domains": {
    "1_IDENTITY": {
      "code": "PHO_ATTR_003",
      "display_name": "Call Duration",
      "description": "Length of phone call in seconds",
      "unit": "seconds"
    },
    "2_TEMPORAL": {
      "auto_calculate": true,
      "from": "call_start_timestamp",
      "to": "call_end_timestamp"
    },
    "3_AUTHORIZATION": {
      "permissions": {
        "all": {"read": true, "write": false}
      }
    },
    "4_COMMUNICATION": {
      "export_format": "seconds",
      "display_format": "mm:ss"
    },
    "5_TRIGGER": {
      "thresholds": [
        {
          "condition": "value > 600",
          "action": "alert_long_call",
          "message": "Call exceeds 10 minutes"
        },
        {
          "condition": "value < 30",
          "action": "flag_short_call",
          "message": "Very brief interaction"
        }
      ]
    },
    "6_DOCUMENT": {
      "include_in_reports": true,
      "aggregate_for_statistics": true
    },
    "7_MATERIAL": {
      "data_type": "integer",
      "constraints": {
```

```json
      "min": 0,
      "max": 7200
    }
  },
  "8_PERFORMANCE": {
    "is_kpi": true,
    "target_range": [180, 300],
    "affects_k_coefficient": true
  },
  "9_SECURITY": {
    "classification": "internal",
    "audit": false
  },
  "10_EVOLUTION": {
    "track_patterns": true,
    "optimize_by_time_of_day": true
  }
 }
}
```

3.2.4 OUTCOME Attribute - Complete 10 Domains

json

```json
{
  "attribute": "outcome",
  "data_type": "enum",
  "required": true,
  "domains": {
    "1_IDENTITY": {
      "code": "PHO_ATTR_004",
      "display_name": "Call Outcome",
      "description": "Result of the phone call"
    },
    "2_TEMPORAL": {
      "versioning": false,
      "final_value": true
    },
    "3_AUTHORIZATION": {
      "permissions": {
        "sales": {"read": true, "write": true}
      }
    },
    "4_COMMUNICATION": {
      "enum_values": [
        "INTERESTED",
        "NOT_INTERESTED",
        "CALLBACK_REQUESTED",
        "INFO_PROVIDED",
        "NO_ANSWER",
        "WRONG_NUMBER"
      ]
    },
    "5_TRIGGER": {
      "outcome_actions": {
        "INTERESTED": ["create_offer", "notify_sales_manager"],
        "CALLBACK_REQUESTED": ["schedule_task", "set_reminder"],
        "NOT_INTERESTED": ["update_do_not_call_list"]
      }
    },
    "6_DOCUMENT": {
      "determines_template": true
    },
    "7_MATERIAL": {
      "storage": "enum_index"
    },
    "8_PERFORMANCE": {
      "conversion_tracking": true,
      "success_outcomes": ["INTERESTED", "CALLBACK_REQUESTED"]
    },
```

```json
    "9_SECURITY": {
      "classification": "internal"
    },
    "10_EVOLUTION": {
      "track_conversion_patterns": true,
      "ml_prediction_next_outcome": true
    }
  }
}
```

3.2.5 NOTES Attribute - Complete 10 Domains

```json
    "9_SECURITY": {
      "classification": "internal"
    },
    "10_EVOLUTION": {
      "track_conversion_patterns": true,
      "ml_prediction_next_outcome": true
```

```json
{
  "attribute": "notes",
  "data_type": "text",
  "required": false,
  "domains": {
    "1_IDENTITY": {
      "code": "PHO_ATTR_005",
      "display_name": "Call Notes",
      "description": "Free text notes about the call"
    },
    "2_TEMPORAL": {
      "versioning": true,
      "track_all_changes": true
    },
    "3_AUTHORIZATION": {
      "permissions": {
        "creator": {"read": true, "write": true},
        "manager": {"read": true, "write": false}
      }
    },
    "4_COMMUNICATION": {
      "max_length": 1000,
      "rich_text": false,
      "language_detection": true
    },
    "5_TRIGGER": {
      "keyword_detection": {
        "urgent_keywords": ["urgent", "complaint", "legal"],
        "product_keywords": ["blonde", "brown", "extension"],
        "action": "tag_and_categorize"
      }
    },
    "6_DOCUMENT": {
      "searchable": true,
      "extract_entities": true
    },
    "7_MATERIAL": {
      "storage": "text",
      "compression": true
    },
    "8_PERFORMANCE": {
      "average_length_tracking": true
    },
    "9_SECURITY": {
      "scan_for_pii": true,
      "redact_sensitive": true
```

```json
    },
    "10_EVOLUTION": {
      "sentiment_analysis": true,
      "auto_summarization": true,
      "suggest_templates": true
    }
  }
}
```

3.3 Workflow Specification

```json
```

```json
{
  "workflow": {
    "states": [
      {
        "code": "NEW",
        "name": "New Call",
        "allowed_transitions": ["IN_PROGRESS", "CANCELLED"],
        "timeout": null,
        "auto_assign": true
      },
      {
        "code": "IN_PROGRESS",
        "name": "Call Active",
        "allowed_transitions": ["COMPLETED", "FOLLOW_UP", "ESCALATED"],
        "timeout": 3600,
        "timer_running": true
      },
      {
        "code": "COMPLETED",
        "name": "Call Completed",
        "allowed_transitions": ["ARCHIVED", "REOPENED"],
        "triggers": ["generate_summary", "update_statistics"]
      },
      {
        "code": "FOLLOW_UP",
        "name": "Follow-up Required",
        "allowed_transitions": ["IN_PROGRESS", "COMPLETED"],
        "creates": "TSK_CALLBACK"
      },
      {
        "code": "ARCHIVED",
        "name": "Archived",
        "allowed_transitions": [],
        "final": true,
        "retention": "7_years"
      }
    ],
    "transitions": [
      {
        "from": "NEW",
        "to": "IN_PROGRESS",
        "action": "start_call",
        "permission": "sales",
        "log_level": "L2_ACTIVITY"
      },
      {
```

```json
      "from": "IN_PROGRESS",
      "to": "COMPLETED",
      "action": "end_call",
      "required_fields": ["outcome", "duration"],
      "log_level": "L1_PROCESS"
    }
   ]
  }
}
```

4. FILEMAKER IMPLEMENTATION

4.1 Database Schema

```sql
-- CMP Implementation in FileMaker
CREATE TABLE CMP (
    _kp_CMP_ID UUID PRIMARY KEY,
    DNA_Code TEXT UNIQUE,
    Template_ID TEXT,
    Template_JSON TEXT,  -- JSON object
    Instance_JSON TEXT,  -- JSON object
    Metadata_JSON TEXT,  -- JSON object
    Created TIMESTAMP,
    Creator TEXT,
    Modified TIMESTAMP,
    Modifier TEXT
);

-- Indexes
CREATE INDEX idx_dna ON CMP(DNA_Code);
CREATE INDEX idx_template ON CMP(Template_ID);
```

4.2 Core FileMaker Scripts

Script: Generate_PHO_DNA

```javascript
```

```
# Generate unique DNA code for PHO
Set Variable [$year; Value: Right(Year(Get(CurrentDate)); 2)]
Set Variable [$type; Value: "PHO"]

# Get next sequence with collision prevention
Perform Script ["Get_Next_Sequence"; Parameter: "PHO"]
Set Variable [$sequence; Value: Get(ScriptResult)]

# Format with automatic overflow handling
If [$sequence < 10000]
    Set Variable [$dna; Value: $type & $year & Right("0000" & $sequence; 4)]
Else If [$sequence < 100000]
    Set Variable [$dna; Value: $type & $year & $sequence]
End If

Exit Script [Result: $dna]
```

Script: Process_10_Domains

```javascript
javascript

# Process all 10 domains for an attribute
Set Variable [$attribute_name; Value: Get(ScriptParameter)]
Set Variable [$domains_json; Value: JSONGetElement(CMP::Template_JSON;
    "attributes." & $attribute_name & ".domains")]

# Loop through each domain
Set Variable [$i; Value: 1]
Loop
    Exit Loop If [$i > 10]

    Set Variable [$domain; Value: JSONGetElement($domains_json; $i)]

    # Process based on domain type
    If [$i = 1]  # IDENTITY
        Perform Script ["Process_Identity_Domain"; Parameter: $domain]
    Else If [$i = 2]  # TEMPORAL
        Perform Script ["Process_Temporal_Domain"; Parameter: $domain]
    # ... continue for all 10 domains
    End If

    Set Variable [$i; Value: $i + 1]
End Loop
```

Script: Generate_RAP_Report

```javascript
# Generate Daily Activity Report from LOG
Set Variable [$user; Value: Get(AccountName)]
Set Variable [$date; Value: Get(CurrentDate)]

# Query LOG table
Set Variable [$sql; Value: "
  SELECT
    COUNT(*) as total_actions,
    COUNT(DISTINCT entity_id) as processes,
    AVG(CASE WHEN action = 'call_completed'
      THEN JSON_EXTRACT(metadata, '$.duration') END) as avg_duration
  FROM LOG
  WHERE actor = ? AND DATE(timestamp) = ?
"]

Perform SQL [Query: $sql; Parameters: $user & ¶ & $date]
Set Variable [$results; Value: Get(ScriptResult)]

# Format as PDF
Set Variable [$report_html; Value: Process_RAP_Template($results)]
Perform Script ["Generate_PDF"; Parameter: $report_html]
```

4.3 JSON Handling Functions

Function: Parse_Attribute_Domains

```javascript
```

```
/*
Function: Parse_Attribute_Domains (json_text)
Purpose: Extract and structure 10 domains from attribute JSON
*/

Let ([
    domains = JSONListKeys(json_text; "domains");
    result = ""
];
    Case(
        not IsEmpty(domains);
        While([
            i = 1;
            output = ""
        ];
            i ≤ ValueCount(domains);
            [
                domain = GetValue(domains; i);
                config = JSONGetElement(json_text; "domains." & domain);
                output = output & Process_Single_Domain(domain; config) & ¶;
                i = i + 1
            ];
            output
        );
        "Error: No domains found"
    )
)
```

4.4 Performance Optimizations

```javascript
```

```
# Optimization 1: Cache Template JSON
If [IsEmpty($$TEMPLATE_CACHE)]
    Set Variable [$$TEMPLATE_CACHE; Value: CMP::Template_JSON]
End If

# Optimization 2: Use ExecuteSQL for reads
Set Variable [$sql; Value: "
    SELECT Instance_JSON
    FROM CMP
    WHERE DNA_Code = ?
    AND Template_ID = ?
"]
Set Variable [$result; Value: ExecuteSQL($sql; ""; ""; $dna; $template)]

# Optimization 3: Batch operations
Set Variable [$batch_size; Value: 100]
Go to Record [First]
Loop
    # Process records in batches
    Perform Script ["Process_Batch"; Parameter: $batch_size]
    Go to Record [Next; Exit after last]
End Loop
```

5. OPERATIONAL FLOWS

5.1 Complete PHO Process Flow

```
mermaid
```

```
sequenceDiagram
    participant M as Manager
    participant PM as Process Manager
    participant S as System
    participant U as User (Sara)
    participant C as CMP
    participant E as ETY
    participant L as LOG

    M->>PM: Define PHO Process
    PM->>C: Save Template with 10 Domains
    PM->>S: Generate Interface
    S->>U: Show PHO Form
    U->>S: Enter Call Data
    S->>C: Create Instance PHO25001
    S->>E: Initialize Workflow
    S->>L: Log L1_PROCESS "created"

    U->>S: Start Call
    S->>E: Update Status "IN_PROGRESS"
    S->>L: Log L2_ACTIVITY "started"

    U->>S: Update caller_name
    S->>C: Update Attribute
    S->>L: Log L3_ATOMIC "attribute_changed"

    U->>S: Complete Call
    S->>E: Update Status "COMPLETED"
    S->>C: Finalize Data
    S->>L: Log L1_PROCESS "completed"

    S->>S: Trigger Automations
    S->>S: Generate RAP Report
```

5.2 Manager Configuration Flow

```
json
```

```json
{
  "manager_actions": [
    {
      "step": 1,
      "action": "Open Process Manager",
      "interface": "process_manager.fmp12",
      "permissions_required": ["process_admin"]
    },
    {
      "step": 2,
      "action": "Create New Process",
      "fields": {
        "process_code": "PHO",
        "process_name": "Phone Call Management",
        "standard_duration": 300
      }
    },
    {
      "step": 3,
      "action": "Define Attributes",
      "count": 5,
      "for_each": "Configure 10 domains"
    },
    {
      "step": 4,
      "action": "Configure Workflow",
      "states": 5,
      "transitions": 7
    },
    {
      "step": 5,
      "action": "Set Triggers",
      "rules": [
        "IF outcome = INTERESTED THEN create_offer",
        "IF duration > 600 THEN alert_manager"
      ]
    },
    {
      "step": 6,
      "action": "Validate and Publish",
      "validations": [
        "All required domains configured",
        "Workflow has end state",
        "At least one trigger defined"
      ]
    }
```

```
  ]
}
```

5.3 User Interaction Flow

```
javascript
```

```
javascript
```

```javascript
// User Sara's Complete Interaction
const userFlow = {
  login: {
    user: "sara.vendite",
    role: "sales_operator",
    permissions: ["create_pho", "view_pho", "edit_own_pho"]
  },

  dashboard: {
    widgets: [
      "my_active_calls",
      "today_statistics",
      "k_coefficient_personal",
      "pending_follow_ups"
    ]
  },

  create_call: {
    steps: [
      {
        action: "click_new_call",
        system_response: "generate_form_from_template"
      },
      {
        action: "enter_caller_name",
        validation: "10_domains_checks",
        ml_assist: "auto_complete_suggestions"
      },
      {
        action: "save_call",
        system_actions: [
          "create_in_cmp",
          "init_workflow_in_ety",
          "log_in_log",
          "sync_to_crm",
          "calculate_k"
        ]
      }
    ]
  }
};
```

6. INTEGRATIONS

6.1 CRM Integration (Salesforce)

```json
{
  "integration": "SALESFORCE",
  "configuration": {
    "endpoint": "https://kool-tool.my.salesforce.com/services/data/v52.0",
    "authentication": {
      "type": "OAuth2",
      "client_id": "${SF_CLIENT_ID}",
      "client_secret": "${SF_CLIENT_SECRET}",
      "refresh_token": "${SF_REFRESH_TOKEN}"
    },
    "mappings": {
      "PHO_to_SF": {
        "caller_name": "Contact.Name",
        "phone_number": "Contact.Phone",
        "outcome": "Task.Status",
        "notes": "Task.Description"
      },
      "SF_to_PHO": {
        "Contact.LastCallDate": "last_interaction",
        "Contact.AccountId": "company_id"
      }
    },
    "sync": {
      "frequency": "realtime",
      "retry_policy": {
        "max_attempts": 3,
        "backoff": "exponential"
      },
      "error_handling": {
        "on_error": "queue_for_retry",
        "alert_after": 5
      }
    }
  }
}
```

6.2 Communication Channels

Email Integration

```javascript
javascript

// FileMaker Send Mail Script
Set Variable [$to; Value: GetField("caller_email")]
Set Variable [$subject; Value: "Call Summary - " & PHO::DNA_Code]
Set Variable [$body; Value: Generate_Call_Summary()]
Set Variable [$attachment; Value: Generate_PDF_Report()]

Send Mail [
    Send via: SMTP Server;
    To: $to;
    Subject: $subject;
    Message: $body;
    Attachment: $attachment
]
```

SMS Integration

```json
json

{
  "sms_gateway": {
    "provider": "Twilio",
    "api_endpoint": "https://api.twilio.com/2010-04-01",
    "from_number": "+40721KOOL",
    "templates": {
      "appointment_reminder": "Reminder: Call scheduled with {caller_name} at {time}",
      "follow_up": "Thank you for your call. Your request #{dna_code} is being processed."
    }
  }
}
```

6.3 Google Workspace Integration

```javascript
javascript

```

```javascript
// Google Drive Integration for Document Storage
const driveIntegration = {
  authentication: "service_account",
  root_folder: "KOOL_TOOL_Calls",

  folder_structure: {
    pattern: "{year}/{month}/{process_type}/{dna_code}",
    example: "2025/09/PHO/PHO250001"
  },

  auto_upload: [
    {
      trigger: "call_completed",
      files: ["call_recording.mp3", "call_summary.pdf"]
    },
    {
      trigger: "contract_generated",
      files: ["contract_draft.docx"]
    }
  ],

  permissions: {
    default: "domain_readable",
    manager_override: "full_access"
  }
};
```

7. TEST CASES & VALIDATION

7.1 Unit Tests for PHO Process

Test Case 1: Create PHO Instance

```
javascript
```

```javascript
describe("PHO Creation Tests", () => {
  test("Should create PHO with valid data", async () => {
    const phoData = {
      caller_name: "Mario Rossi",
      phone_number: "+393921234567",
      duration: 240,
      outcome: "INTERESTED",
      notes: "Requests 500 blonde strands"
    };

    const result = await createPHO(phoData);

    expect(result.dna_code).toMatch(/^PHO\d{6,}$/);
    expect(result.status).toBe("NEW");
    expect(result.k_coefficient).toBeLessThan(1.5);
  });

  test("Should validate required fields", async () => {
    const invalidData = {
      caller_name: "A", // Too short
      phone_number: "invalid"
    };

    await expect(createPHO(invalidData)).rejects.toThrow("Validation failed");
  });
});
```

Test Case 2: Workflow Transitions

```javascript
test("PHO Workflow Transitions", async () => {
  const pho = await createPHO(validData);

  // Test valid transition
  await transitionWorkflow(pho.dna_code, "IN_PROGRESS");
  const updated = await getPHO(pho.dna_code);
  expect(updated.status).toBe("IN_PROGRESS");

  // Test invalid transition
  await expect(
    transitionWorkflow(pho.dna_code, "ARCHIVED")
  ).rejects.toThrow("Invalid transition");
});
```

7.2 Integration Tests

```javascript
describe("CRM Sync Tests", () => {
  test("Should sync to Salesforce", async () => {
    const pho = await createPHO(testData);
    await wait(1000); // Wait for async sync

    const sfContact = await salesforce.query(
      `SELECT Name, Phone FROM Contact WHERE ExternalId__c = '${pho.dna_code}'`
    );

    expect(sfContact.Name).toBe(testData.caller_name);
    expect(sfContact.Phone).toBe(testData.phone_number);
  });
});
```

7.3 Performance Benchmarks

```json
{
  "performance_requirements": {
    "create_pho": {
      "target_ms": 500,
      "max_ms": 1000,
      "includes": ["validation", "save", "workflow_init", "log"]
    },
    "search_pho": {
      "target_ms": 100,
      "max_ms": 300,
      "result_size": 100
    },
    "generate_rap": {
      "target_ms": 2000,
      "max_ms": 5000,
      "includes": ["query_log", "aggregate", "format_pdf"]
    },
    "calculate_k": {
      "target_ms": 50,
      "max_ms": 100
    }
  }
}
```

7.4 K Coefficient Validation

```javascript
// Test K Calculation
function testKCalculation() {
  const testCases = [
    {
      input: {
        extracycles: 1.0,
        performance: 1.0,
        presenteeism: 1.0
      },
      expected: 1.0, // Perfect efficiency
      description: "Theoretical perfection"
    },
    {
      input: {
        extracycles: 1.5,
        performance: 0.8,
        presenteeism: 0.95
      },
      expected: 1.97, // 1.5 / (0.8 * 0.95)
      description: "Typical scenario"
    },
    {
      input: {
        extracycles: 2.0,
        performance: 0.5,
        presenteeism: 1.0
      },
      expected: 4.0, // 2.0 / (0.5 * 1.0)
      description: "Critical inefficiency"
    }
  ];

  testCases.forEach(tc => {
    const result = calculateK(tc.input);
    assert(Math.abs(result - tc.expected) < 0.01, tc.description);
  });
}
```

8. APPENDICES

Appendix A: Complete JSON Templates

A.1 PHO Process Template (CMP)

```json
json

{
  "template_id": "PHO_TEMPLATE_V1",
  "template_name": "Phone Call Management",
  "version": "1.0",
  "created": "2025-09-17T10:00:00Z",
  "created_by": "admin",
  "attributes": {
    "caller_name": { /* Complete 10 domains as shown in section 3.2.1 */ },
    "phone_number": { /* Complete 10 domains */ },
    "duration": { /* Complete 10 domains */ },
    "outcome": { /* Complete 10 domains */ },
    "notes": { /* Complete 10 domains */ }
  },
  "workflow": { /* As defined in section 3.3 */ },
  "triggers": [
    {
      "name": "create_offer_on_interest",
      "condition": "outcome == 'INTERESTED'",
      "actions": ["create_entity('OFC')", "notify_sales_manager"]
    }
  ],
  "performance": {
    "standard_duration": 300,
    "k_target": 1.5,
    "sla": {
      "response_time": 60,
      "resolution_time": 300
    }
  }
}
```

Appendix B: SQL Queries

B.1 RAP Generation Query

```sql
sql
```

```sql
-- Generate Daily Activity Report
WITH user_activity AS (
  SELECT
    actor,
    DATE(timestamp) as activity_date,
    COUNT(*) as total_actions,
    COUNT(DISTINCT entity_id) as unique_processes,
    COUNT(CASE WHEN log_level = 'L1_PROCESS' THEN 1 END) as major_events,
    COUNT(CASE WHEN log_level = 'L2_ACTIVITY' THEN 1 END) as activities,
    COUNT(CASE WHEN log_level = 'L3_ATOMIC' THEN 1 END) as micro_actions
  FROM LOG
  WHERE DATE(timestamp) = CURRENT_DATE
  GROUP BY actor, DATE(timestamp)
),
process_metrics AS (
  SELECT
    c.created_by as user,
    COUNT(*) as processes_created,
    AVG(CAST(JSON_EXTRACT(c.instance_json, '$.duration') AS INTEGER)) as avg_duration,
    AVG(CAST(JSON_EXTRACT(c.instance_json, '$.k_coefficient') AS FLOAT)) as avg_k
  FROM CMP c
  WHERE DATE(c.created_at) = CURRENT_DATE
  AND c.template_id LIKE 'PHO%'
  GROUP BY c.created_by
)
SELECT
  ua.*,
  pm.processes_created,
  pm.avg_duration,
  pm.avg_k
FROM user_activity ua
LEFT JOIN process_metrics pm ON ua.actor = pm.user
ORDER BY ua.total_actions DESC;
```

B.2 K Coefficient Trend Analysis

```sql
sql
```

```sql
-- K Coefficient Trend Analysis
SELECT
  DATE(created_at) as date,
  AVG(CAST(JSON_EXTRACT(instance_json, '$.k_coefficient') AS FLOAT)) as daily_avg_k,
  MIN(CAST(JSON_EXTRACT(instance_json, '$.k_coefficient') AS FLOAT)) as best_k,
  MAX(CAST(JSON_EXTRACT(instance_json, '$.k_coefficient') AS FLOAT)) as worst_k,
  COUNT(*) as total_processes
FROM CMP
WHERE template_id = 'PHO_TEMPLATE_V1'
AND created_at >= DATE_SUB(CURRENT_DATE, INTERVAL 30 DAY)
GROUP BY DATE(created_at)
ORDER BY date DESC;
```

Appendix C: K Coefficient Formulas

C.1 Base Formula

K = Extracycles / (Performance × Presenteeism)

Where:
- Extracycles = 1 + (Non_Value_Time / Total_Time)
- Performance = Standard_Time / Actual_Time
- Presenteeism = 1 - Absenteeism_Rate

C.2 PHO-Specific Calculation

```javascript
javascript
```

```
function calculatePHOCoefficient(callData) {
  // Extract metrics
  const standardTime = 300; // 5 minutes
  const actualTime = callData.duration;
  const interruptions = callData.interruptions || 0;
  const corrections = callData.corrections || 0;

  // Calculate components
  const nonValueTime = (interruptions * 30) + (corrections * 60);
  const extracycles = 1 + (nonValueTime / actualTime);
  const performance = standardTime / actualTime;
  const presenteeism = 1.0; // Assume full presence for digital process

  // Calculate K
  const k = extracycles / (performance * presenteeism);

  return {
    k_coefficient: k,
    components: {
      extracycles,
      performance,
      presenteeism
    },
    status: k < 1.5 ? 'GOOD' : k < 2.0 ? 'WARNING' : 'CRITICAL'
  };
}
```

Appendix D: Glossary

Term	Definition
3P3	Three-Process-Three paradigm: CMP-ETY-LOG architecture
Attribute	Elementary process that manages information
CMP	Components table - stores templates and instances
DNA Code	Unique identifier format PRXYYNNNN
Domain	One of 10 behavioral patterns for attributes
ETY	Entity table - orchestrates workflow
Extracycles	Non-value-adding activities
IPO	Input-Process-Output model
K Coefficient	Efficiency metric (lower is better)
LOG	Immutable history table
Meta-attribute	Attribute of an attribute
PHO	Phone Call Management process

Term	Definition
RAP	Report Activity Process (daily report)
Presenteeism	Opposite of absenteeism

Appendix E: Implementation Checklist

☐ Database schema created (CMP, ETY, LOG)

☐ Process Manager interface developed

☐ 10 domains configuration UI complete

☐ PHO template fully defined

☐ All 5 attributes configured with 10 domains each

☐ Workflow state machine implemented

☐ Triggers and automations active

☐ LOG granularity levels working

☐ RAP generation automated

☐ CRM integration tested

☐ K coefficient calculation verified

☐ User training materials prepared

☐ Performance benchmarks met

☐ Security audit passed

☐ Documentation complete

CONCLUSION

This blueprint represents the complete technical specification for implementing the PHO process using 3P3 ontology. Every attribute is treated as an elementary process with 10 domains governing its complete lifecycle. The system achieves:

1. **Complete Information Control** through meta-attributes

2. **Automatic Report Generation** from granular logs

3. **Measurable Efficiency** via K coefficient

4. **Seamless Integration** with external systems

5. **Continuous Evolution** through machine learning

The PHO process serves as the reference implementation that can be replicated for TSK, PRJ, RCH, TEH, and all other KOOL TOOL processes.

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Building the future of process management, one attribute at a time.