FIG. 3 - PROTOCOL ORDER AUTHENTICATION PROCESS FLOW

TEMPORAL EVOLUTION AND CONTEXT-ADAPTIVE AUTHENTICATION WORKFLOW

STEP 1: INITIATION
Entity A begins
communication session
(10)

STEP 2: CONTEXT
Detect communication
context (routine/emergency)
(20)

STEP 3: PATTERN
Generate expected
behavioral sequence
(30)

STEP 4: CAPTURE
Monitor actual protocol
sequence from Entity A
(40)

STEP 5: ANALYSIS
Extract behavioral
features timing
(50)

STEP 6: SIMILARITY
Calculate multi-dimensional
similarity score
(60)

NO — **AUTHENTICATION DECISION** — **YES**
(70)

FAILURE PATH
Score Threshold
Authentication Denied
(90)

SUCCESS PATH
Score ≥ Threshold
Authentication Success
(80)

CONTEXT-SPECIFIC ADAPTATIONS
EMERGENCY: Minimal protocols, ±10% timing tolerance, 0.8 security depth
FINANCIAL: Maximum verification, ±20% timing tolerance, 0.95 security depth

SECURITY ALERT
Log failed attempt
Potential threat analysis
(110)

PATTERN EVOLUTION
Update interaction count
Evolve timing tolerance
(100)

TEMPORAL EVOLUTION TIMELINE

Day 0: Base Pattern → Day 30: +5% complexity → Day 60: +10% complexity → Day 90: Context adaptation