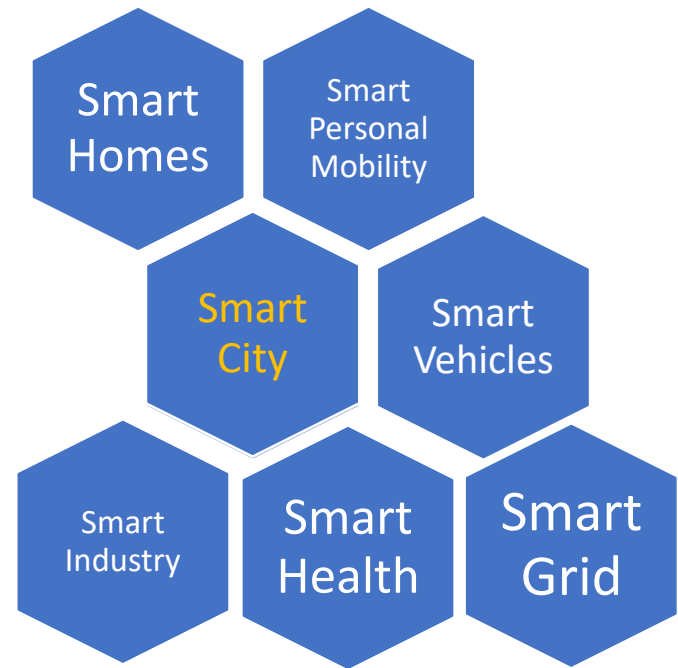


# **Towards Agentic Web3 for Society 5.0-driven Smart City**

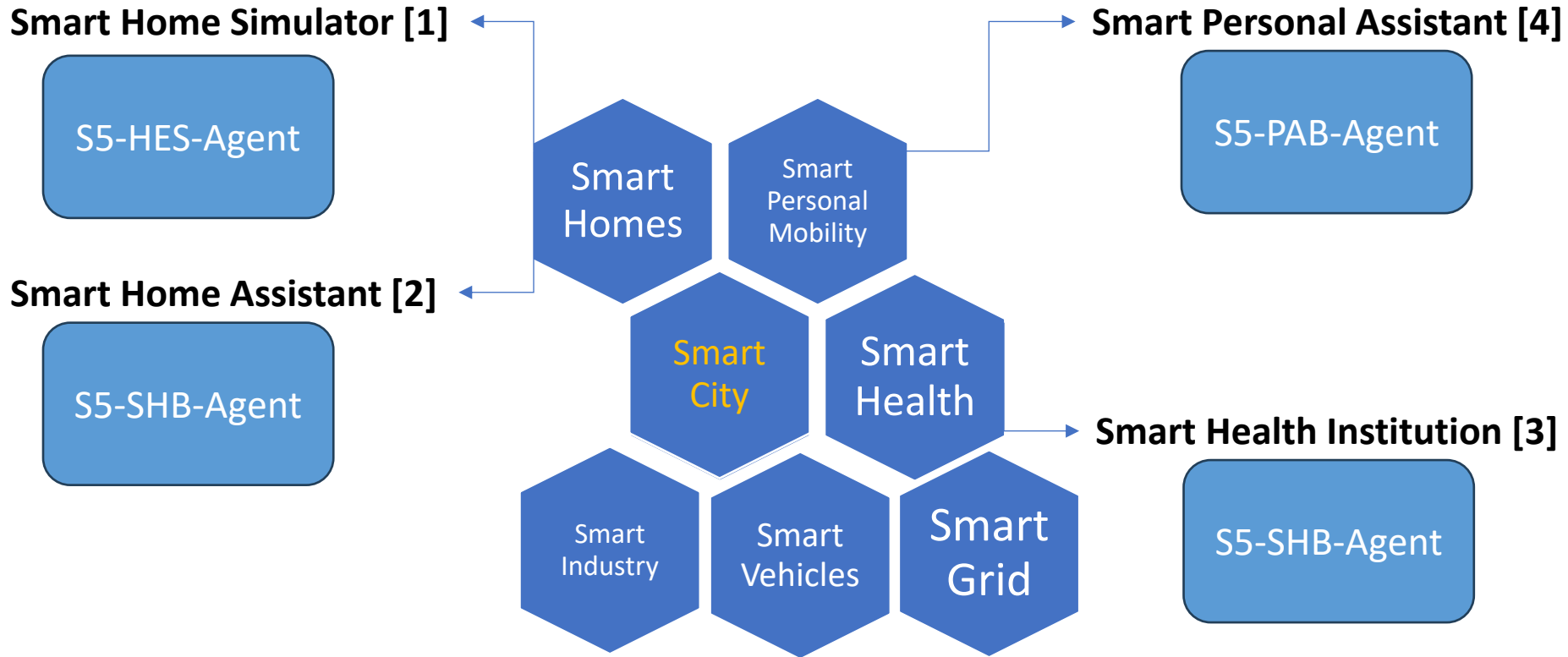
# Background & Motivation

- Smart City Eco system made of
  - Diverse smart components;
    - Such as homes, personal, vehicle, health, grid, law & order, etc.
- 2 of key requirements;
  - Human centered autonomy
  - Integrity (security and privacy) preserved communication
- To address them proposed;
  - For each components;
    - Web 3.0 driven communication infra
    - Society 5.0 driven agentic orchestration



- Therefore, at the end of the day, we are working towards;  
➔ **Agentic Web3 for Society 5.0-driven Smart City**

# Contributions



[1] S5-HES Agent: Society 5.0-driven Agentic Framework to Democratize Smart Home Environment Simulation. ArXiv. <https://arxiv.org/abs/2603.01554>

[2] S5-SHB Agent: Society 5.0-enabled Multi-model Agentic Blockchain Framework for Smart Home. ArXiv. <https://arxiv.org/abs/2603.05027>

[3] Case Study on Agentic AI-enabled MultiChain 2 Community-driven IoT Ecosystem, 2026 ICEIC, Macau, China, 2026, doi: 10.1109/ICEIC69189.2026.11386375

[4] S5-PAB Agent: Society 5.0-driven Personal Assistant Blockchain for Personal Mobile Communication, working progress

# S5-HES-Agent

- S5-HES Agent: Society 5.0-driven Agentic Framework to Democratize Smart Home Environment Simulation, ArXiv. <https://arxiv.org/abs/2603.01554>

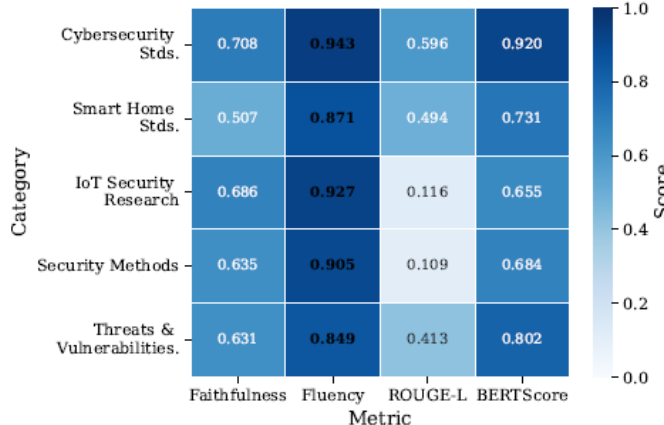
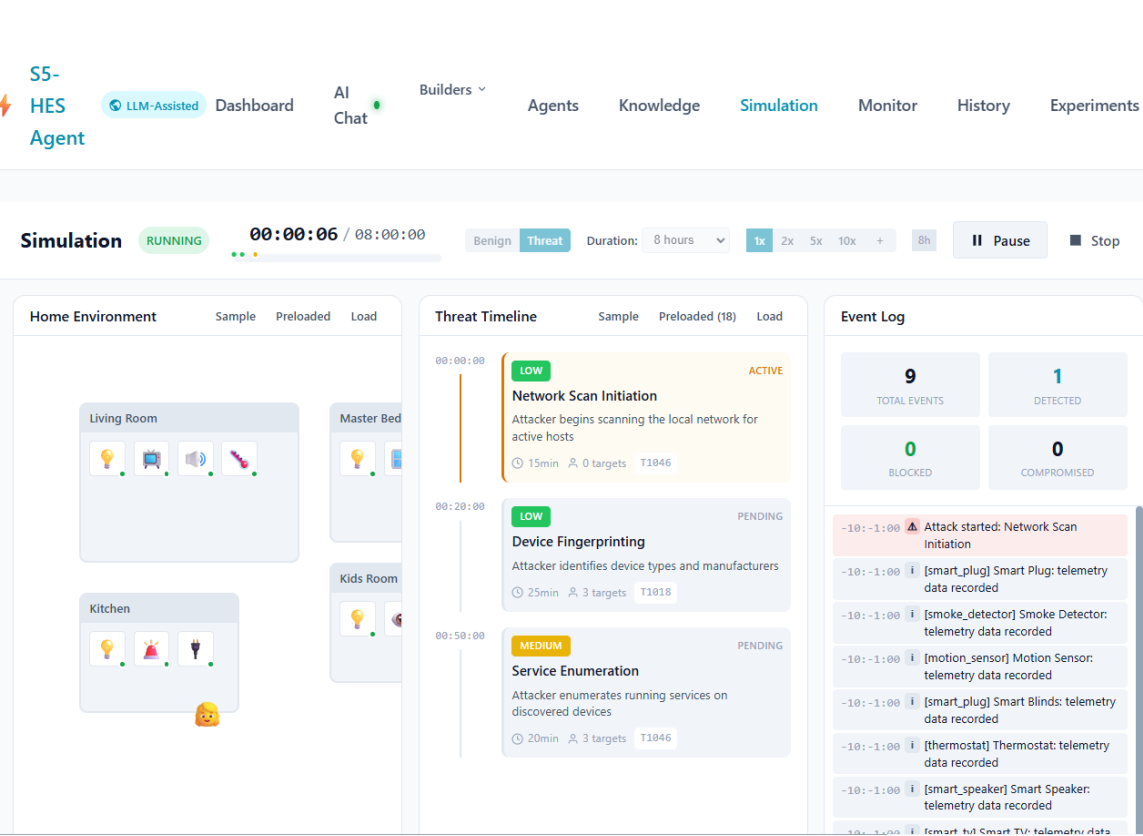
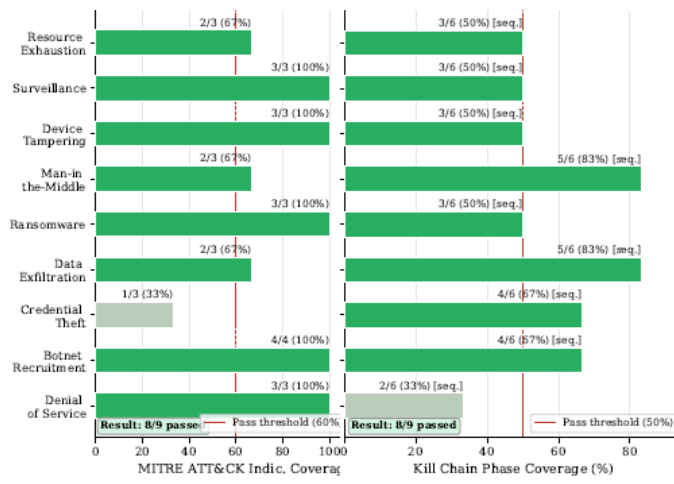


FIGURE 4: Category-wise generation quality

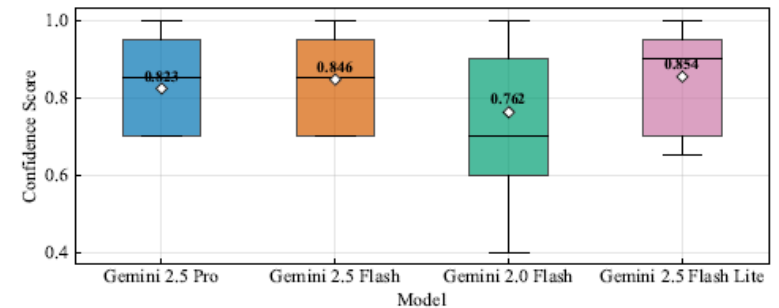
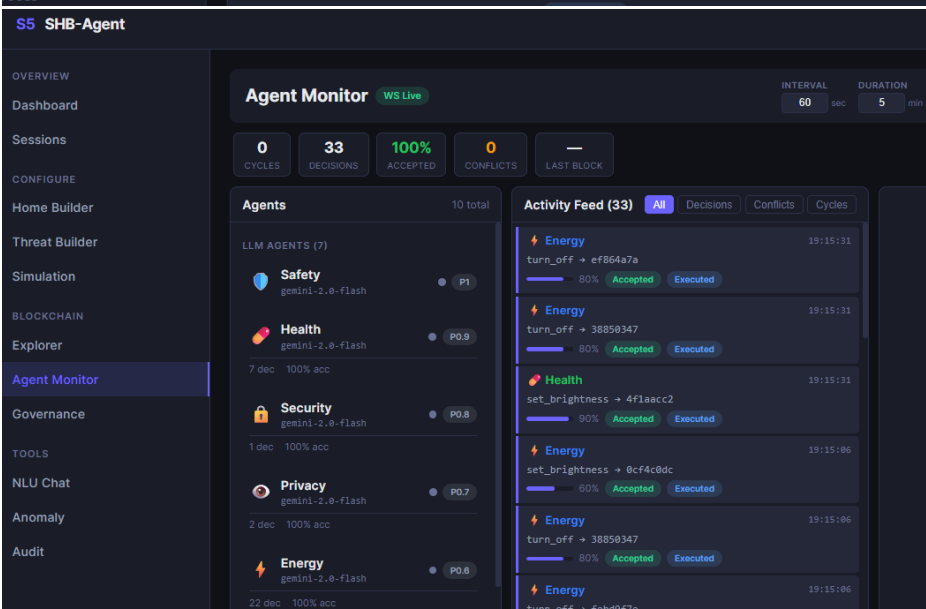
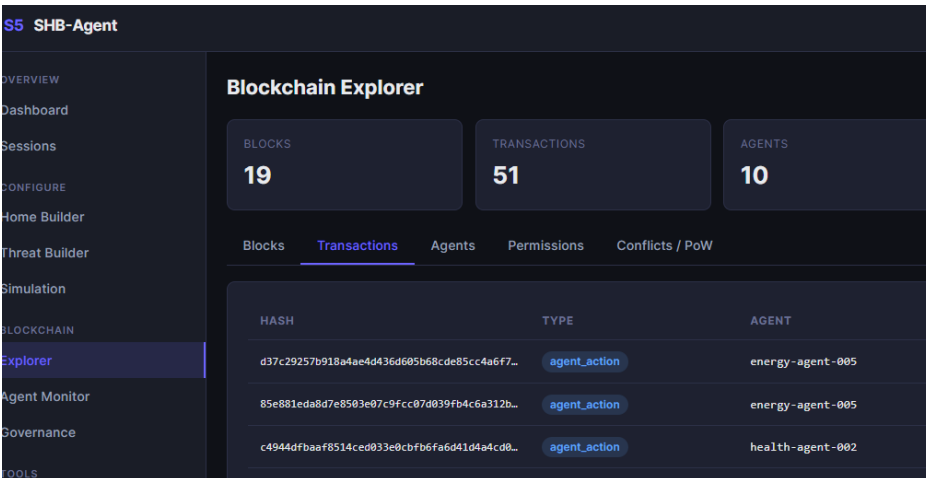


(a) Attack behaviour coverage (b) Attack lifecycle fidelity

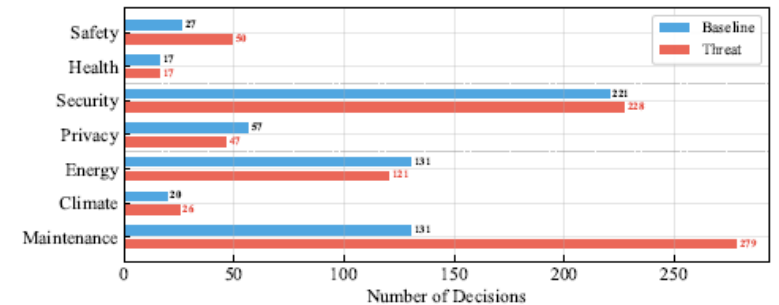
FIGURE 6: Position-based metrics comparison

# S5-SHB-Agent

- S5-SHB Agent: Society 5.0-enabled Multi-model Agentic Blockchain Framework for Smart Home. ArXiv. <https://arxiv.org/abs/2603.05027>



(a) Confidence distribution per model (baseline)



(b) Decision volume per agent role: baseline and threat conditions

Fig. 7: Multi-agent decision quality against Gemini model variants. (a) Box plots of per-decision confidence scores from baseline sessions (b) Number of decisions issued by each agent role, comparing baseline (no faults) against threat (7 injected faults), aggregated across all models.

# Smart Health Assistant

- Case Study on Agentic AI-enabled MultiChain 2 Community-driven IoT Ecosystem, doi: 10.1109/ICEIC69189.2026.11386375

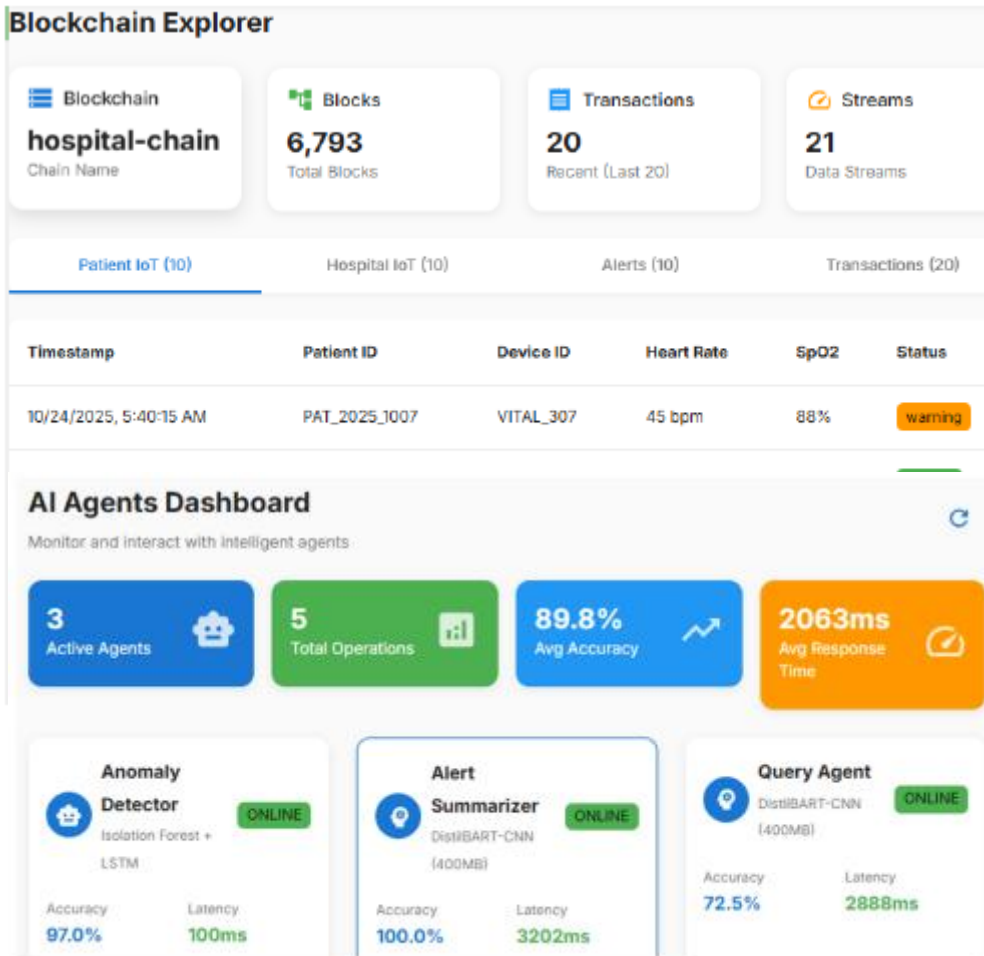


Fig. 5. Agentic AI dashboard

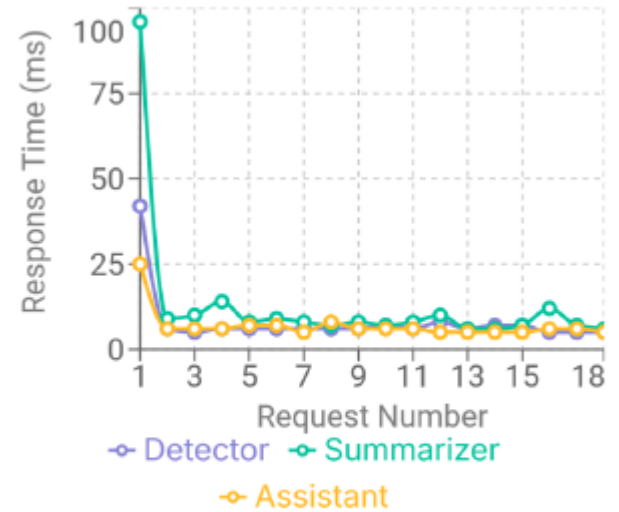


Fig. 6. Agentic AI response time

TABLE I  
AGENTIC AI AND BLOCKCHAIN INTEGRATION

Agent	AI (ms)	BC (ms)	Total (ms)	Success
Detector	8.3	1840.0	1848.3	100%
Summarizer	2486.6	2239.7	4726.3	100%

# S5-PAB-Agent

- S5-PAB Agent: Society 5.0-driven Personal Assistant Blockchain for Personal Mobile Communication, working progress

**S5 PAB Agent**

### Preferences & Governance

Preferences Presets Models Change Log

Editable Preferences (Tier 1-3)

PARAMETER	VALUE	TIER	TYPE	ACTION
preferred_temp	22	T1	float	Edit
preferred_brightness	80	T1	int	Edit
quiet_hours_start	23:00	T1	---	Edit
quiet_hours_end	07:00	T1	---	Edit
voice_responses	false	T1	---	Edit
tts_voice	neutral	T1	str	Edit
alert_severity_filter	warnings	T1	str	Edit
daily_report	false	T1	---	Edit
comfort_vs_energy	0.5	T2	float	Edit
security_vs_privacy	0.5	T2	float	Edit

### S5 PAB Agent

- Dashboard
- Wellness
- Companion Chat
- \* Agent Monitor
- Blockchain
- RAG Explorer
- Knowledge Graph
- Sessions
- Governance

### Agent Monitor

Session: TEST\_12

AGENT ID	ROLE	OWNER	STATUS	ACTION
safety-000	safety	alice	Enabled	Disable
wellness-001	wellness	alice	Enabled	Disable
companion-002	companion	alice	Enabled	Disable
privacy-003	privacy	alice	Enabled	Disable
energy-004	energy	alice	Enabled	Disable

**S5 PAB Agent**

### Personal Blockchain

BLOCKS	TRANSACTIONS	PENDING TX
691	908	0

AGENTS	CONFLICTS
5	0

Blocks Transactions Pending Off-Chain

All agents All types

TELEMETRY\_ANCHOR TELEMETRY\_ANCHOR block #690 100%

Action: anchor\_telemetry Device: all 5/6/2026, 8:48:47 PM  
merkle\_root: 8a9b3c3031488c4ed801ce8f9c8329c54cd59e78f27bffc7d30c83292e077c8 batch\_id: 47  
Tx: 114cf5bd...05ff2286 Reasoning: 8a9b3c30...92e077c8

### S5 PAB Agent

- Dashboard
- Wellness
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- \* Agent Monitor
- Blockchain
- ? RAG Explorer
- o Knowledge Graph
- ~ Sessions
- ! Governance
- = Preferences

### Knowledge Graph

160 NODES 211 EDGES

ObservableProperty (100) Device (24) ActuableProperty (19) Metric (11) Activity (4) Person (1) TimeWindow (1)

Nodes Edges Traverse Ontology · Classes Properties Subsumption Triples Temporal Replay Compar

Person

ID	TYPE	PROPERTIES	ACTIONS
alice	Person	name	Traverse

**alice\_personal\_lock** Device

PROPERTIES

- device\_type: personal\_lock
- can\_actuate: true
- description: Personal smart lock (luggage, room safe)

OUTGOING (3)

- observes: alice\_personal\_lock\_is\_locked
- observes: alice\_personal\_lock\_battery\_level
- can\_actuate: alice\_personal\_lock\_act\_lock\_state

INCOMING (1)

Thank you