la VIDA: A System for Value and Identity Driven Autonomous Agent Behavior in Virtual World Scenarios

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Identity Profile

- Values - about one's self, e.g. honest

- Beliefs - ideas about certain concepts, e.g. money -> useful

- Attitudes - general emotional response toward certain concepts, e.g. work -> boring

- Personality - environmental and genetic impulse to interpret reality and respond in a certain way

  - Five-Factor Model (FFM); CANOE: Conscientiousness, Agreeableness, Neuroticism, Openness, Extroversion

  - Trait has values $\in [0, 1]$, expressed as behavior that is weak, medium, strong

Execution

- Behavior sequence i.e. action sequence with affective tags is executed in virtual environment

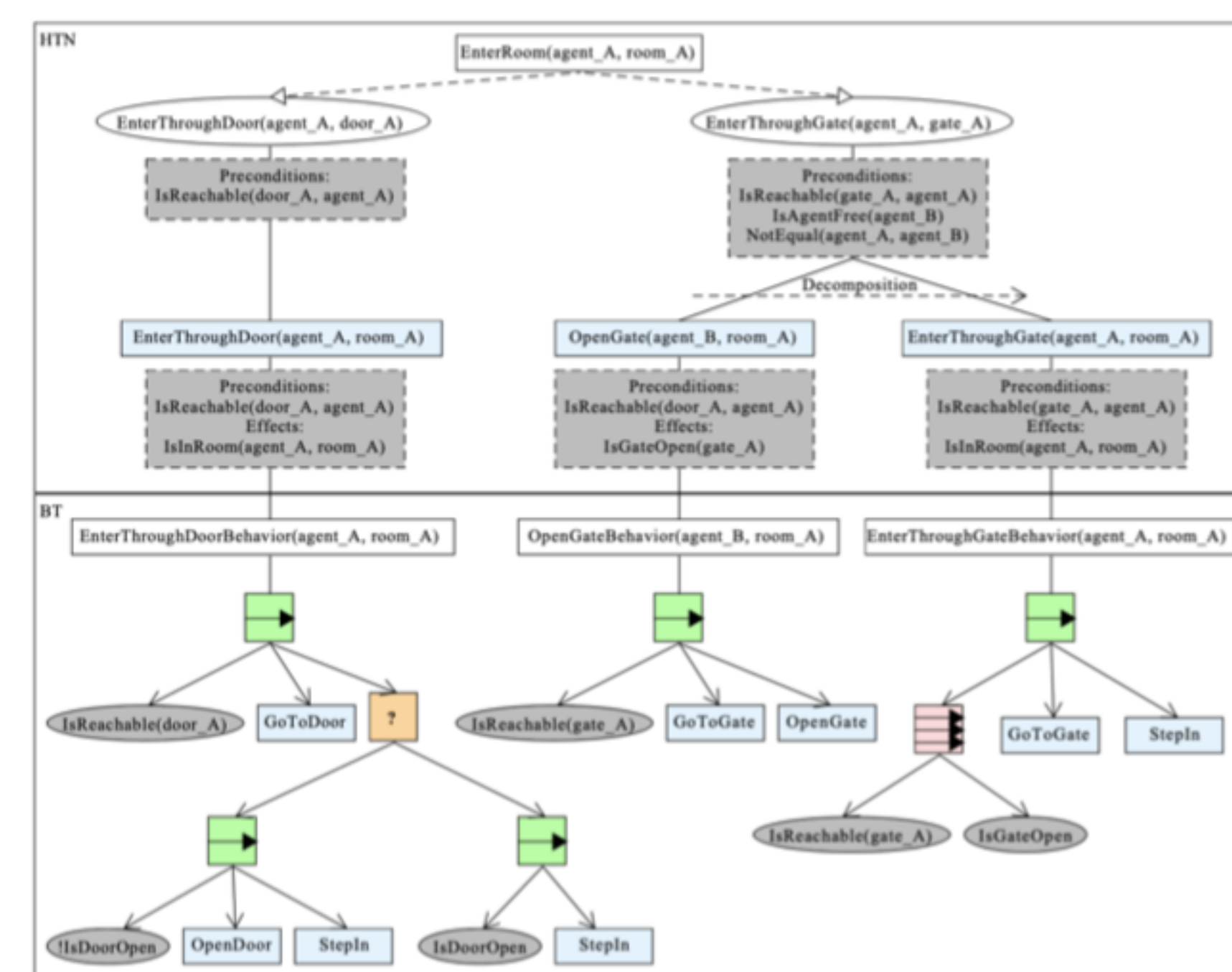- World state used to refine plans

- Trait behaviors expressed through animations

Figure 1: GGM [1], ConceptNet [2], HTN-BT Planner [3]
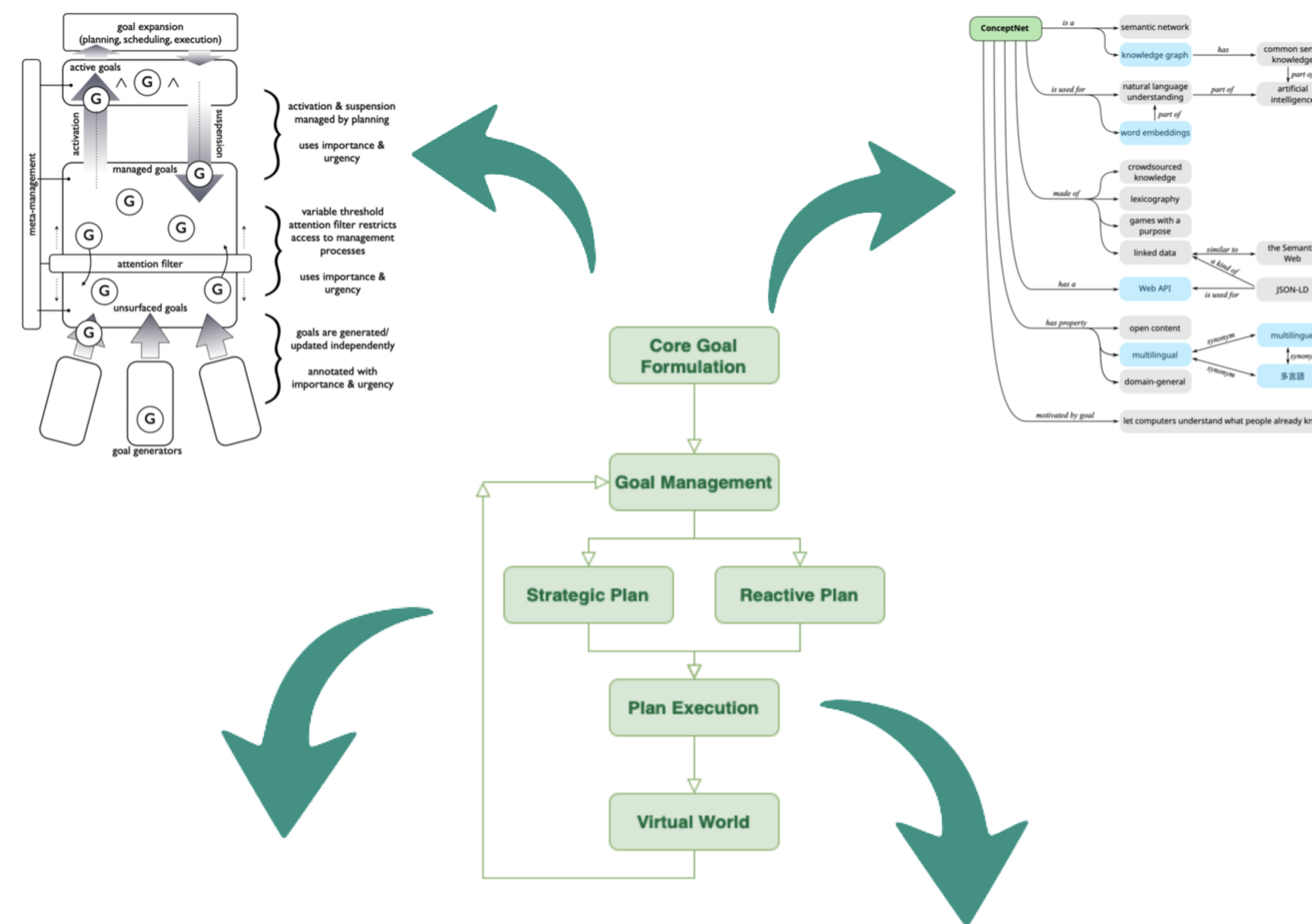
Planning

- Strategic plan

  - Overall plan consistent with purpose derived from drives

  - Elements of plan generated assuming future state

- Reactive Plan

  - Online, real-time plan based on a decomposed action of strategic plan

  - Plan is generated from the current state

References

[1] Marc Hanheide et al.
A framework for goal generation and management.
Proceedings of the AAAI Workshop on Goal-Directed Autonomy, 2010.

[2] Robyn Speer et al.
Conceptnet 5.5: An open multilingual graph of general knowledge.
Proceedings of the 31st AAAI Conference on AI, pages 4444–4451, 2017.

[3] Xenija Neufeld et al.
A hybrid approach to planning and execution in dynamic environments through hierarchical task networks and behavior trees.
Proceedings of the 14th AI and Interactive Digital Entertainment Conference, 14(1):201–207, 2018.