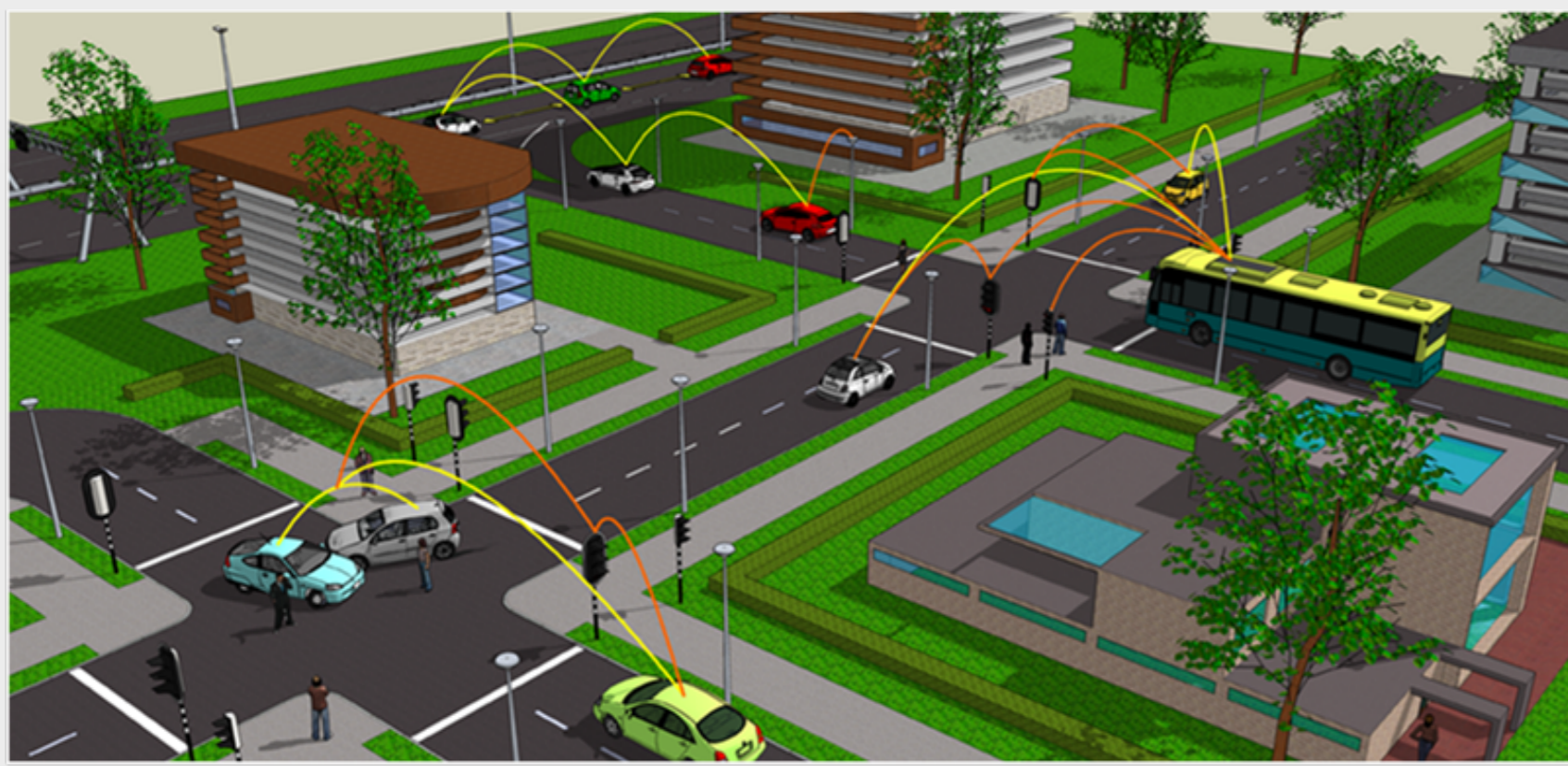
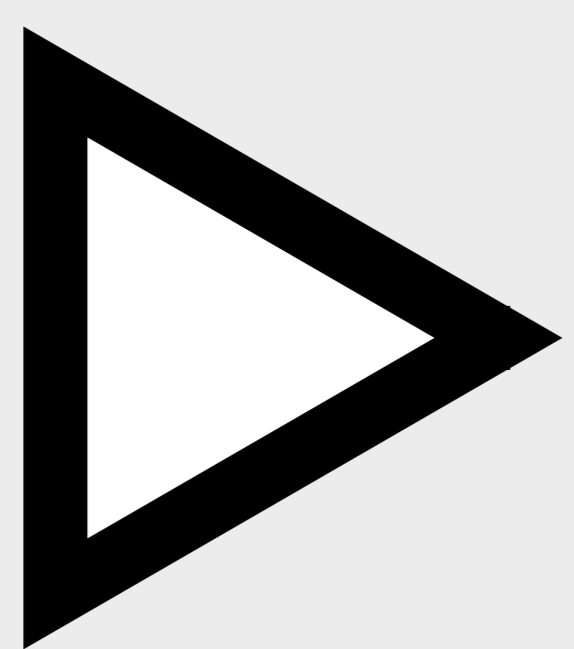


REAL-TIME CONTEXT AWARE REASONING IN ON-BOARD INTELLIGENT TRAFFIC SYSTEMS

Arjan Stoter, Simon Dalmolen, Eduard Drenth, Erik Cornelisse, Wico Mulder



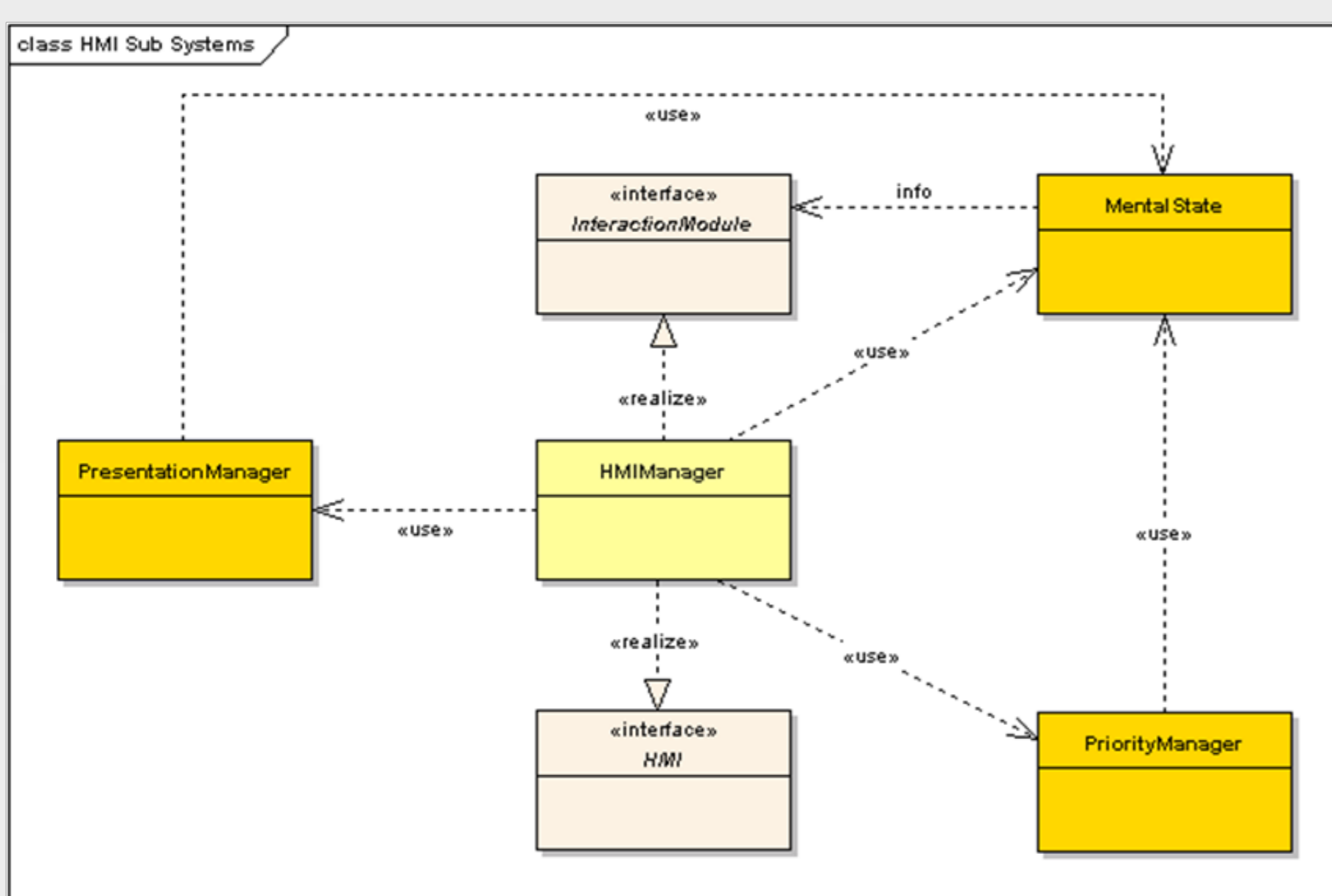
ADAS / ATIS ++



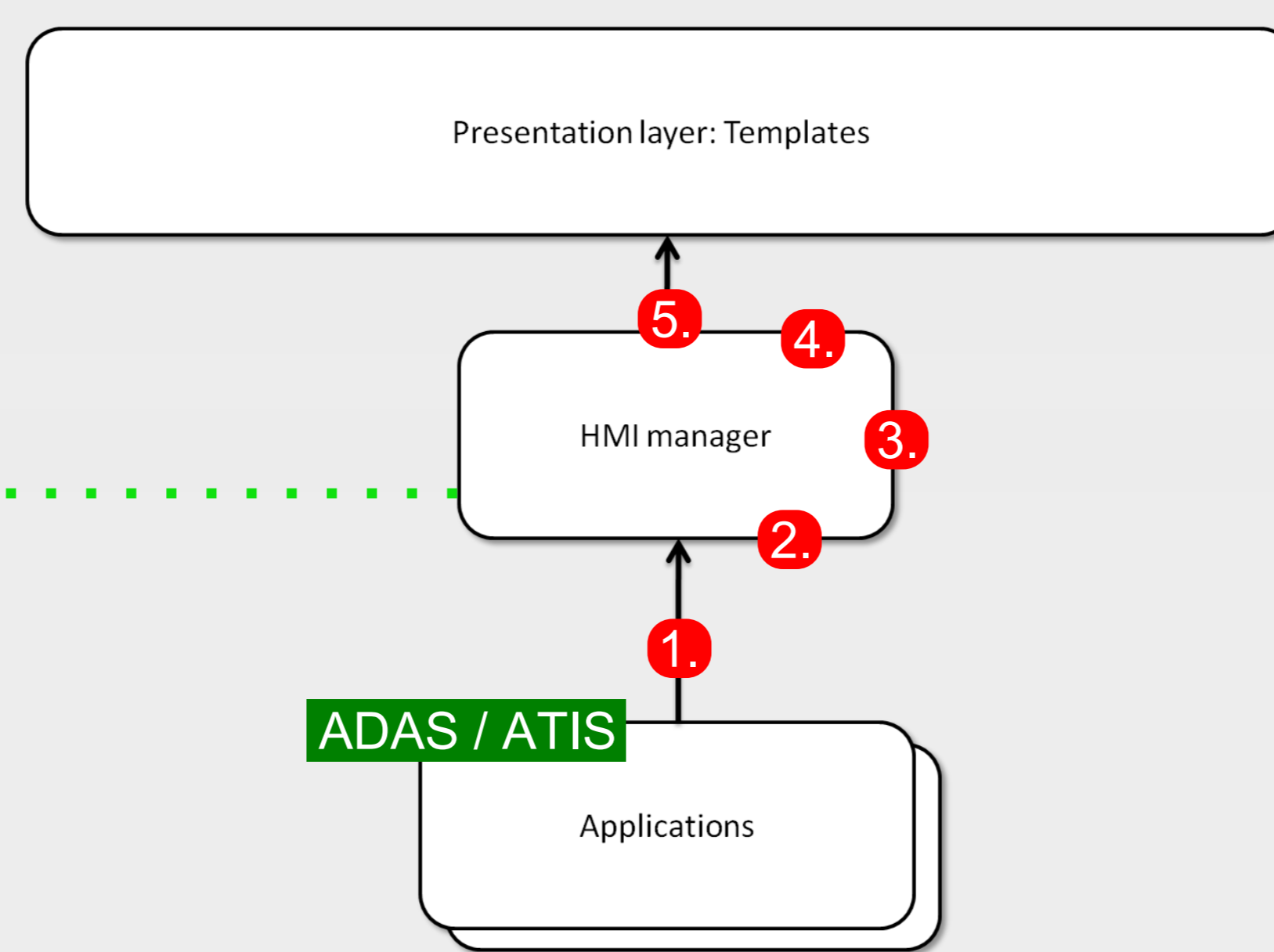
In-vehicle information management

Provide drivers the information that they need: **prioritize based on context.**

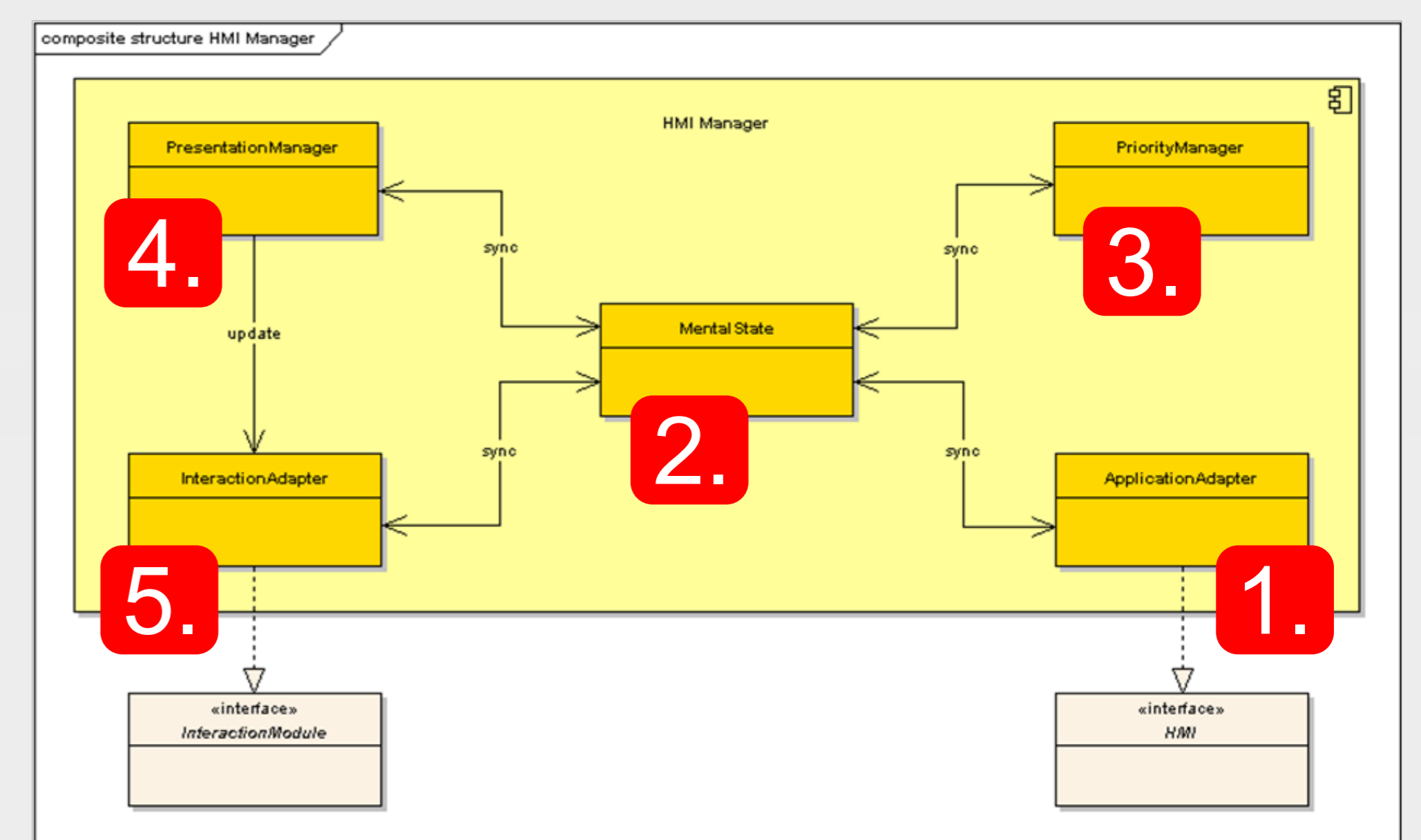
HMI manager



HMI-m capability overview



HMI-m position



HMI-m Architecture

1. Information is sent by **applications** as **messages** with properties "importance" and "urgency".
2. **MentalState** stores/shares messages received from applications: **context of information**.
3. **PriorityManager** uses **importance/urgency/MentalState** to determine **message priorities**.
4. Presentation **templates** are **loaded upon request 5.** from the **PresentationManager**.

Configuration Time

Runtime

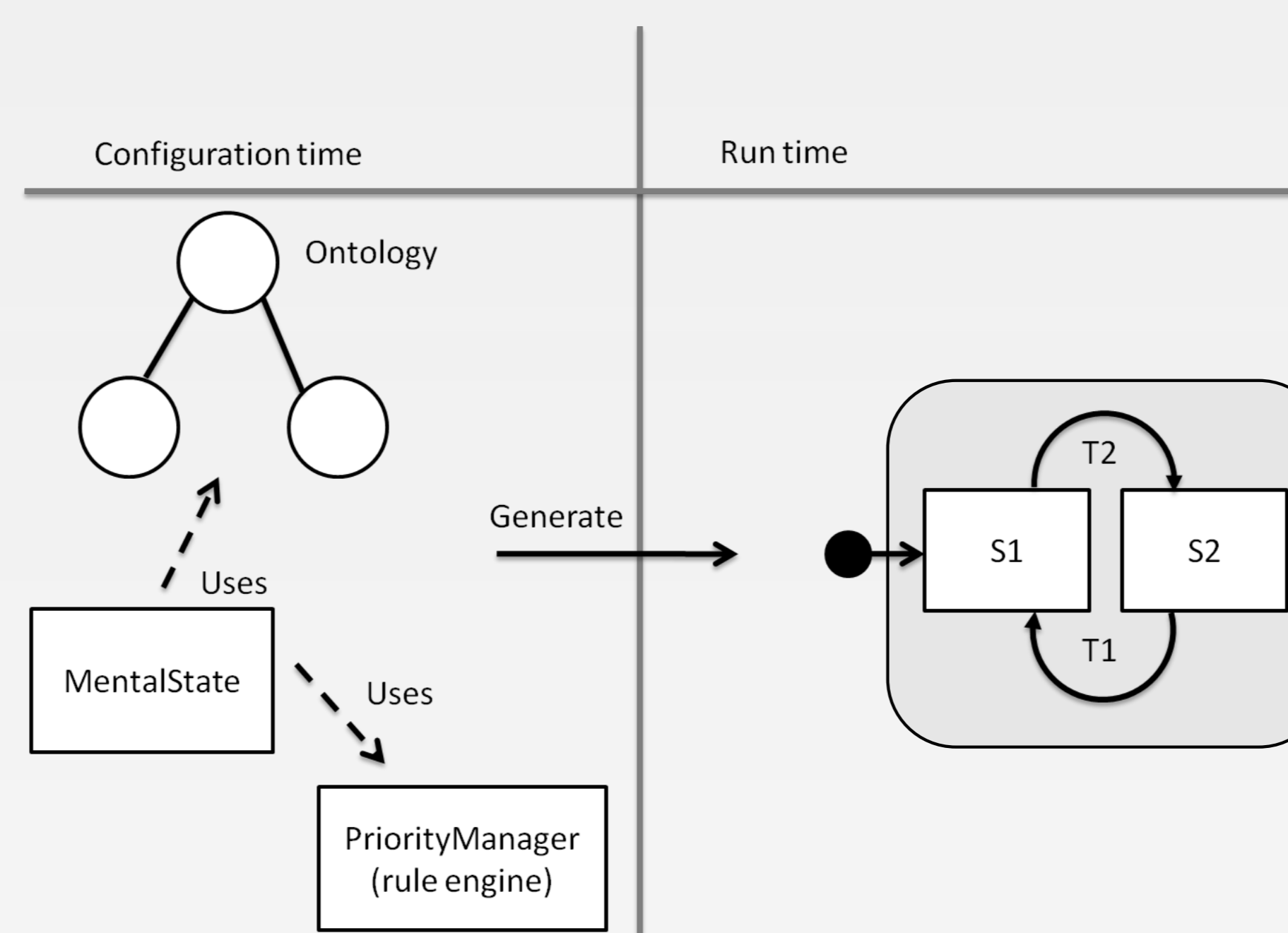
Ontology: OWL

Message classes

- Safety
- Navigation
- Vehicle control
- Traffic
- Services

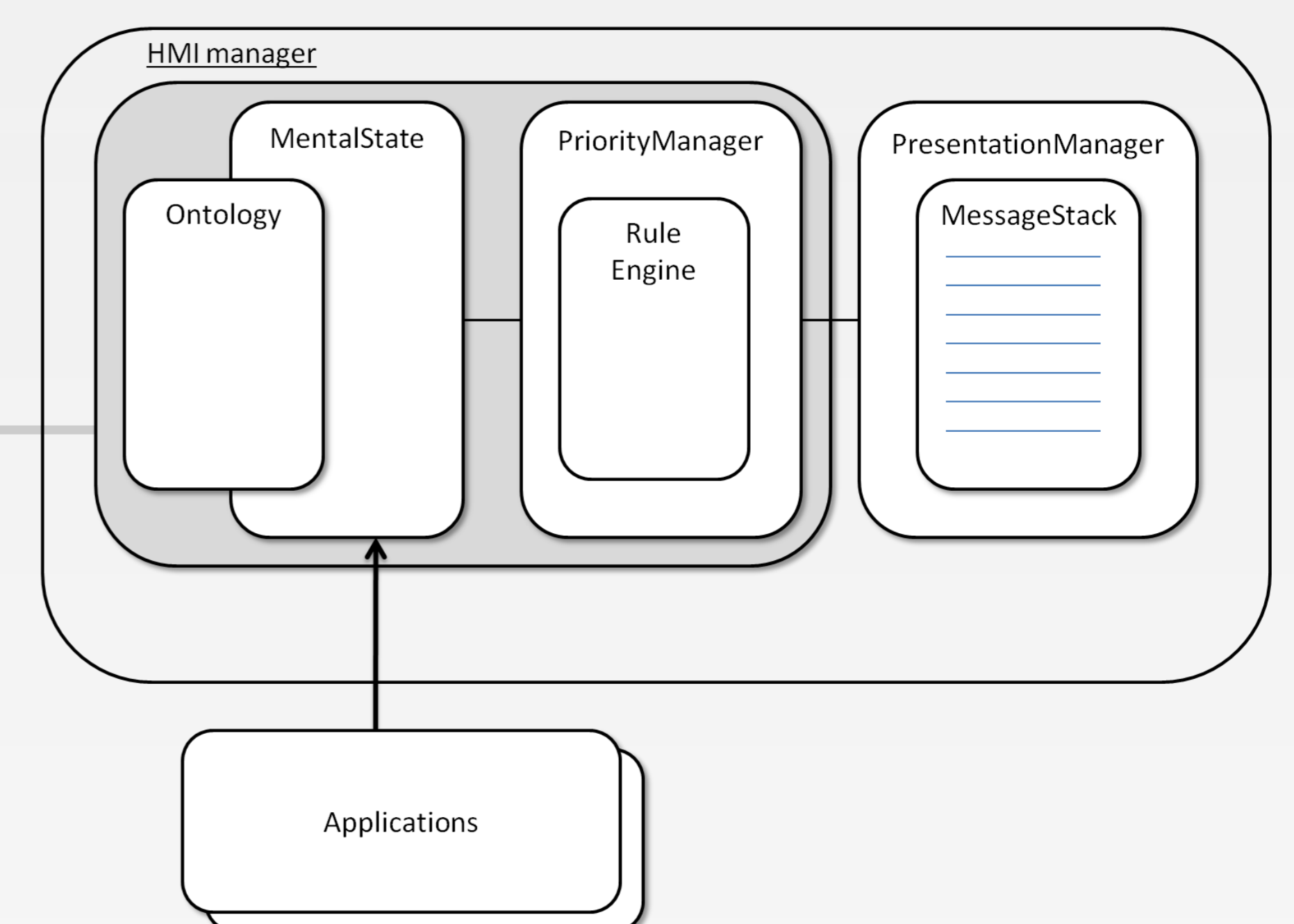
Rule engine: SWRL

- ✓ Standardization
- ✓ Deductive reasoning
- ✗ Timeliness & safety
- ✗ Computational power of on-board units



"Heavy weight solution in light weight environment"

Finite State Machine



- ✓ Timeliness & safety
- ✓ Computational power of on-board units