Why Did the Robot Do That?

Stephanie Rosenthal, PhD

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Prof. Manuela Veloso (ML)

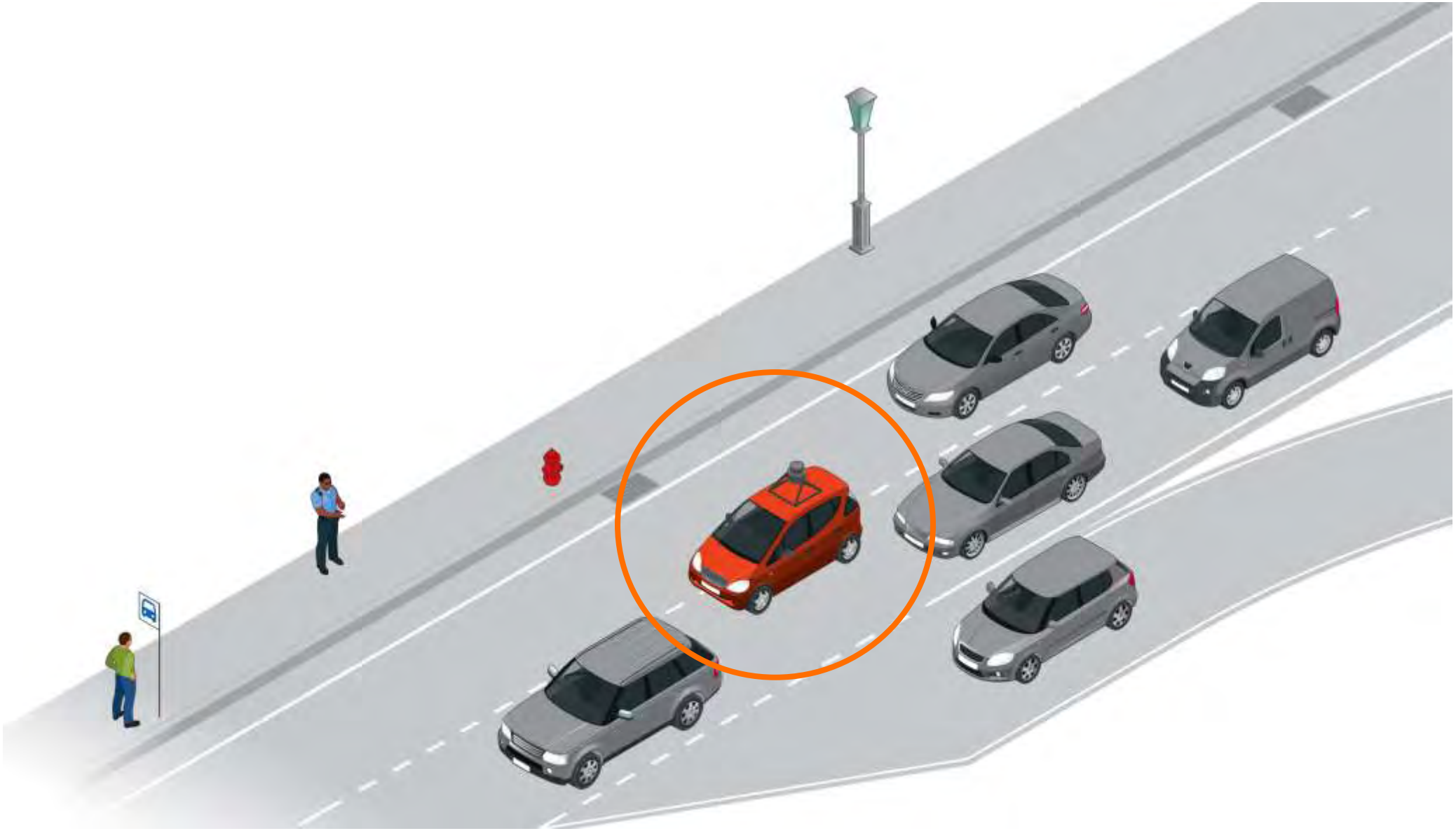
Robot Complexity

Photo Credit: http://www.digitaltrends.com/cars/uber-pittsburgh-robo-taxi-experiment/

Trust in Robot Performance

Photo Credit: AP

Why Did the Robot Do That?



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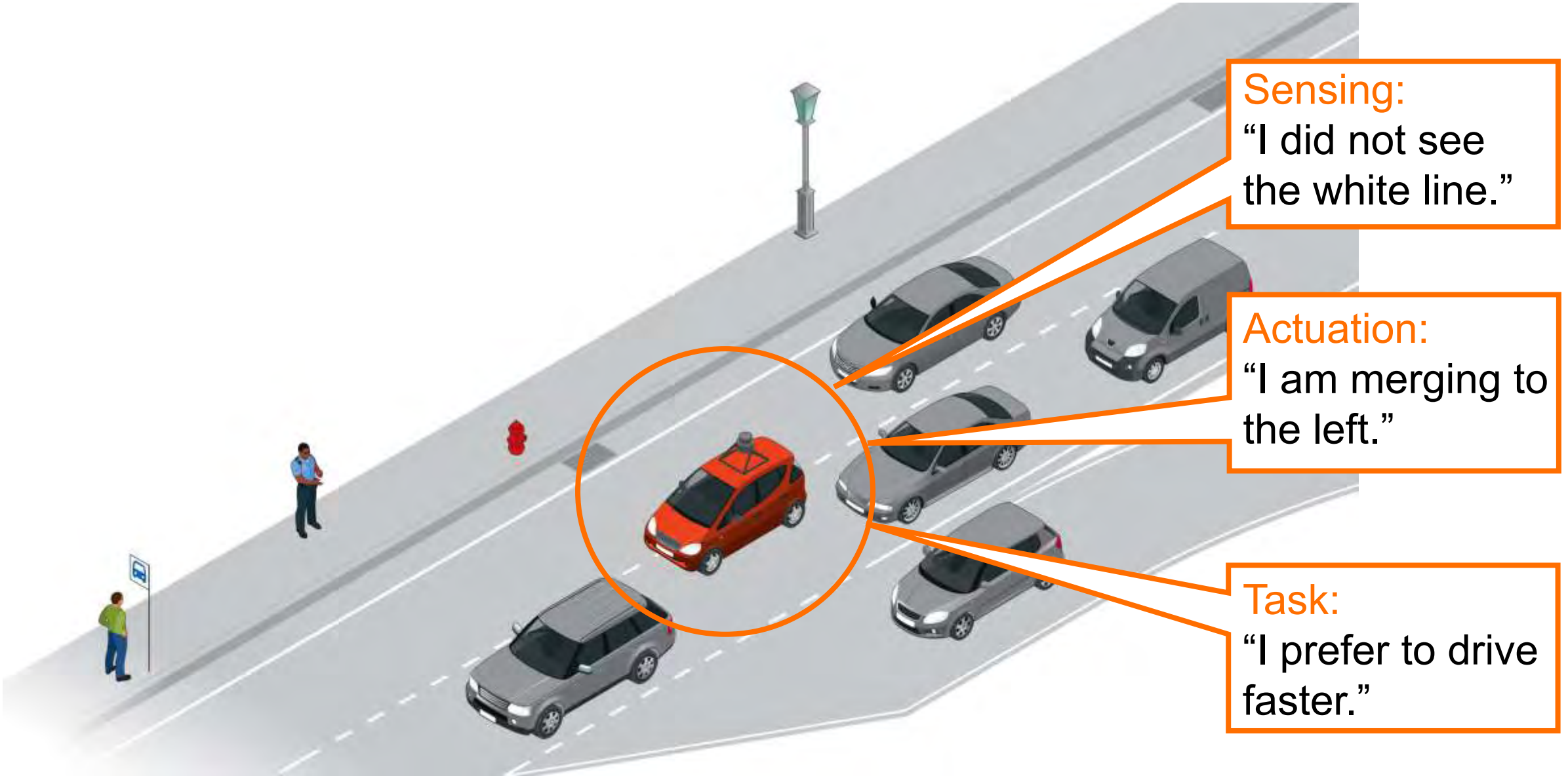
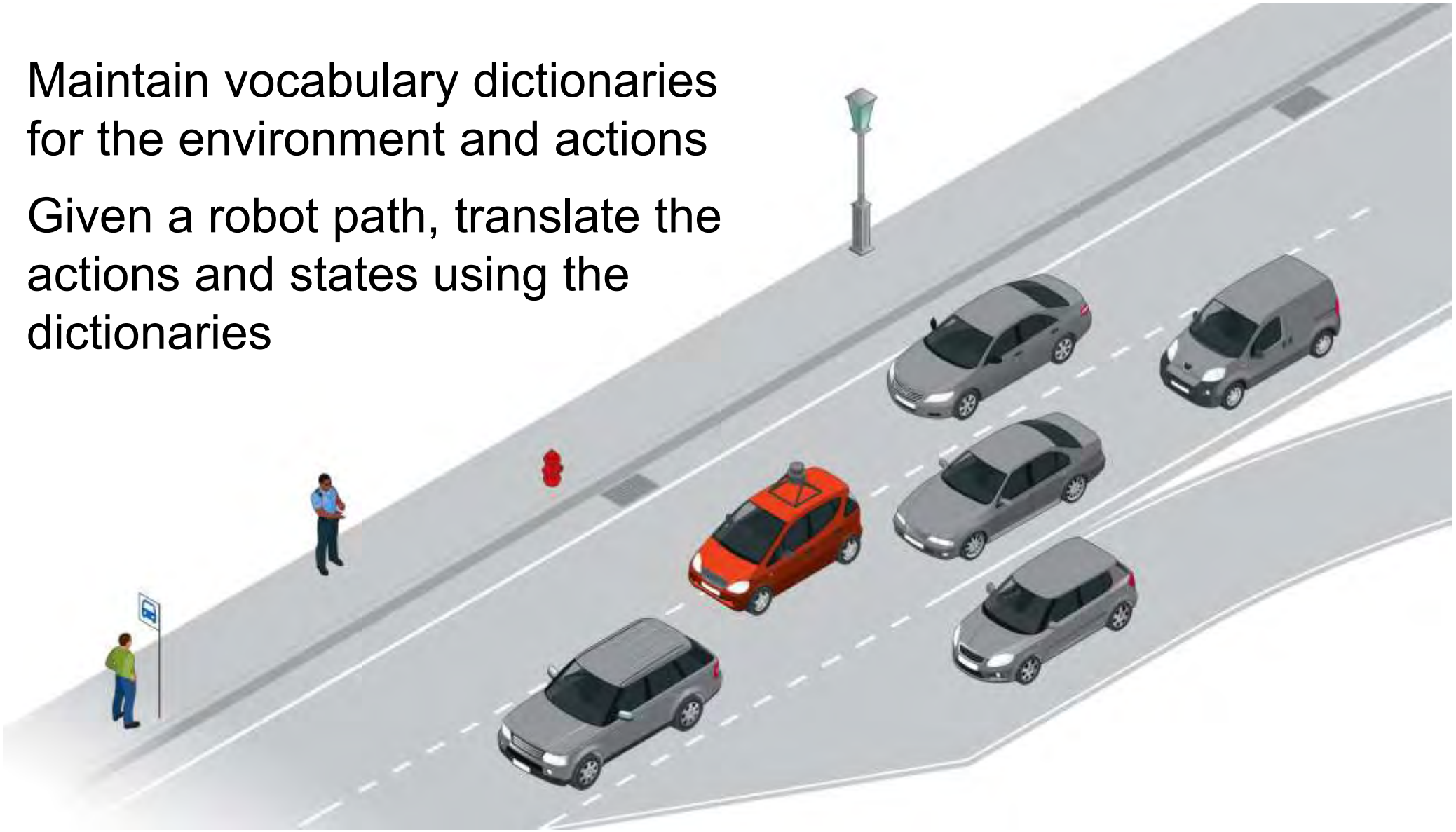


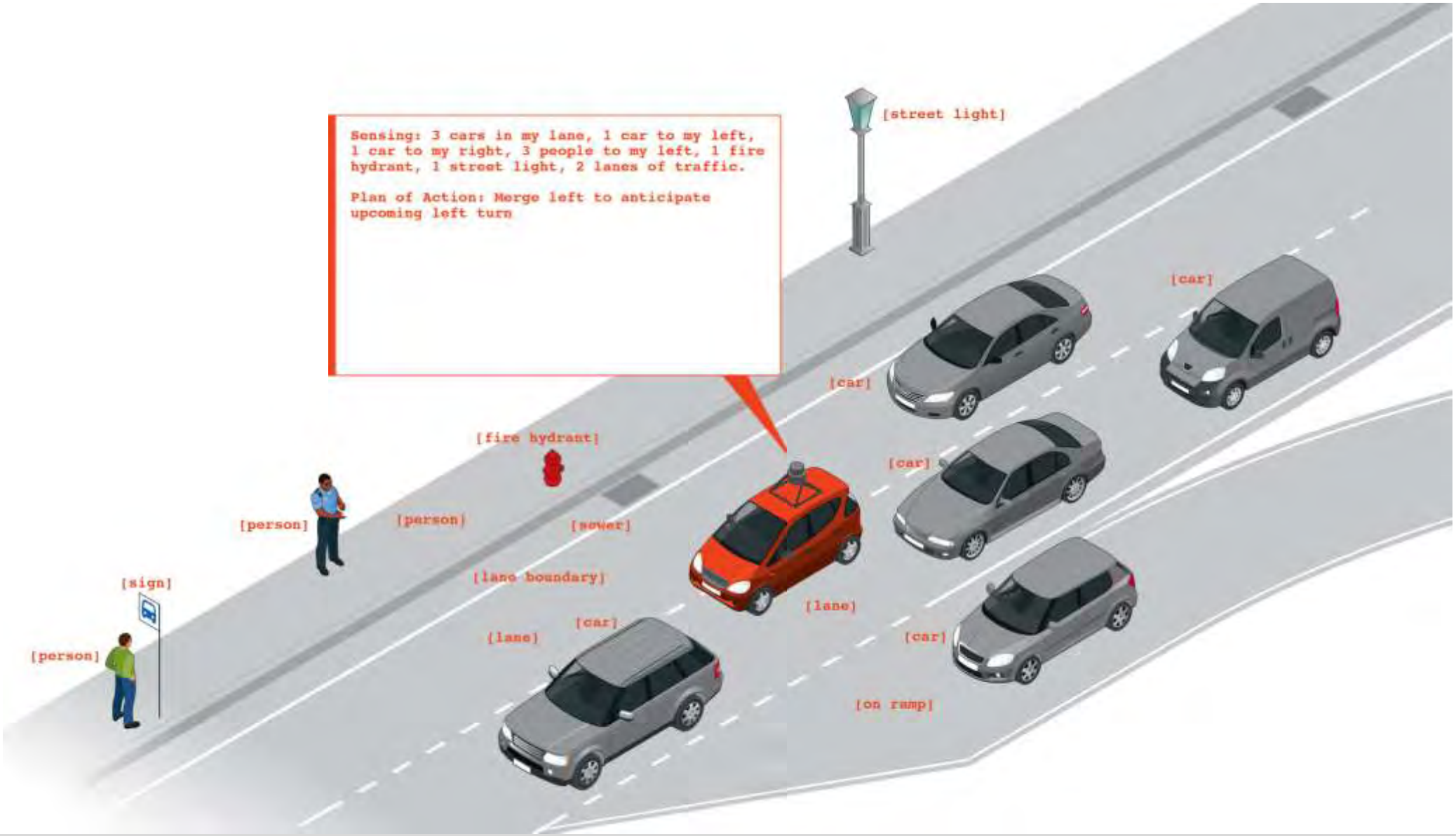
Actuation Verbalization

Maintain vocabulary dictionaries for the environment and actions

Given a robot path, translate the actions and states using the dictionaries



Actuation Verbalization



Verbalization in Practice

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Trust and Small Unmanned Surface Vehicles

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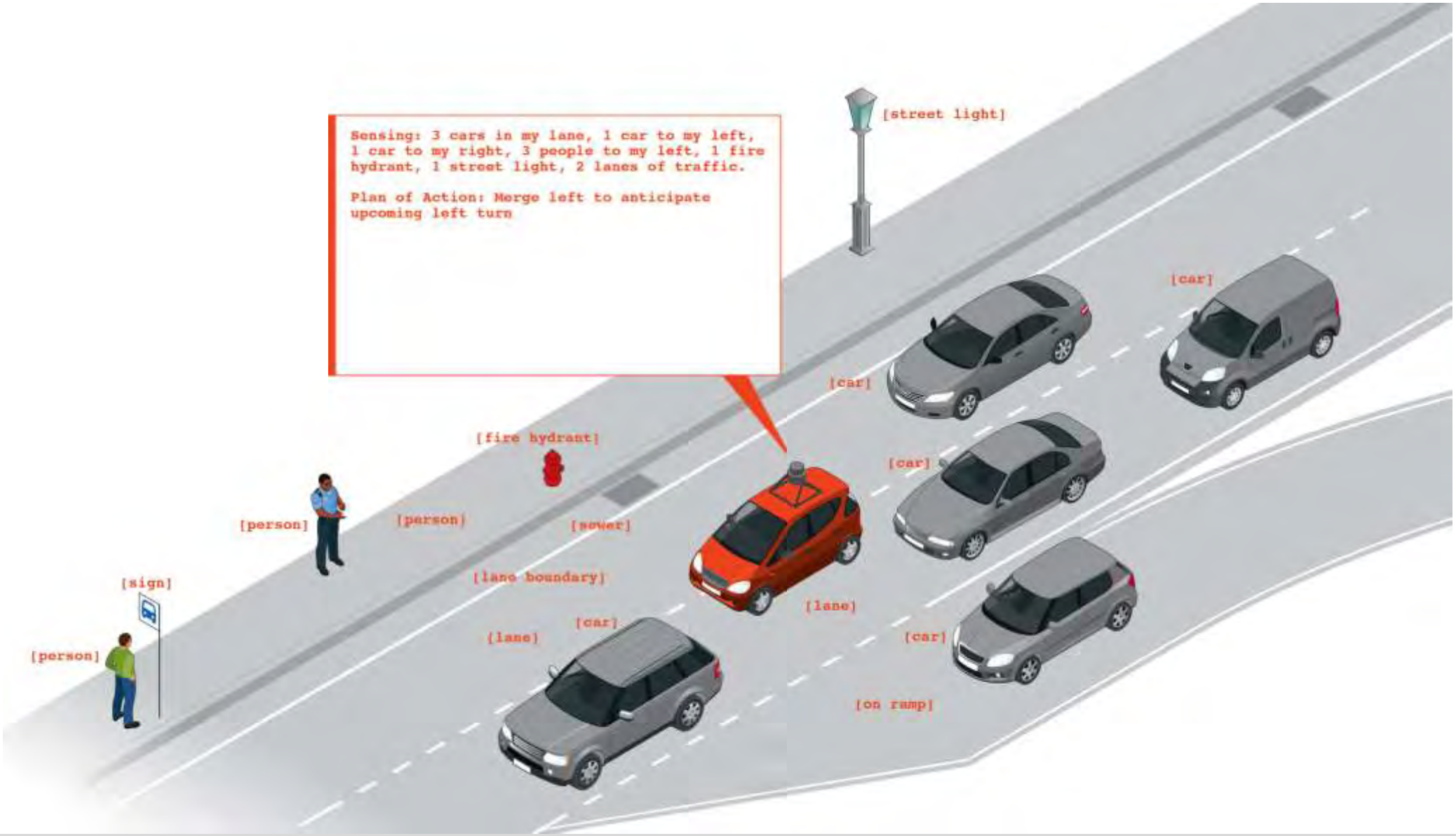
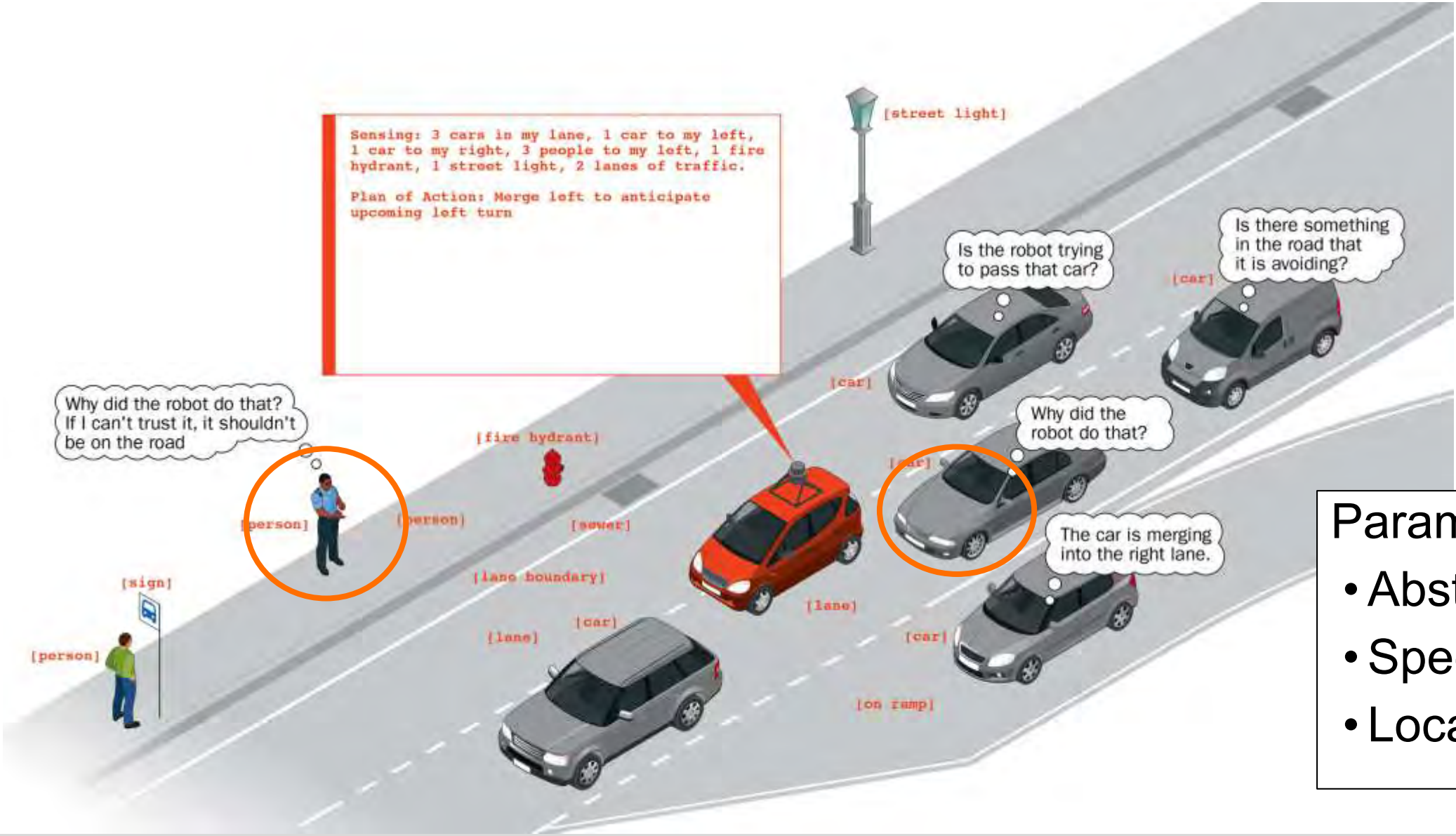
Challenges in Generating Explanations



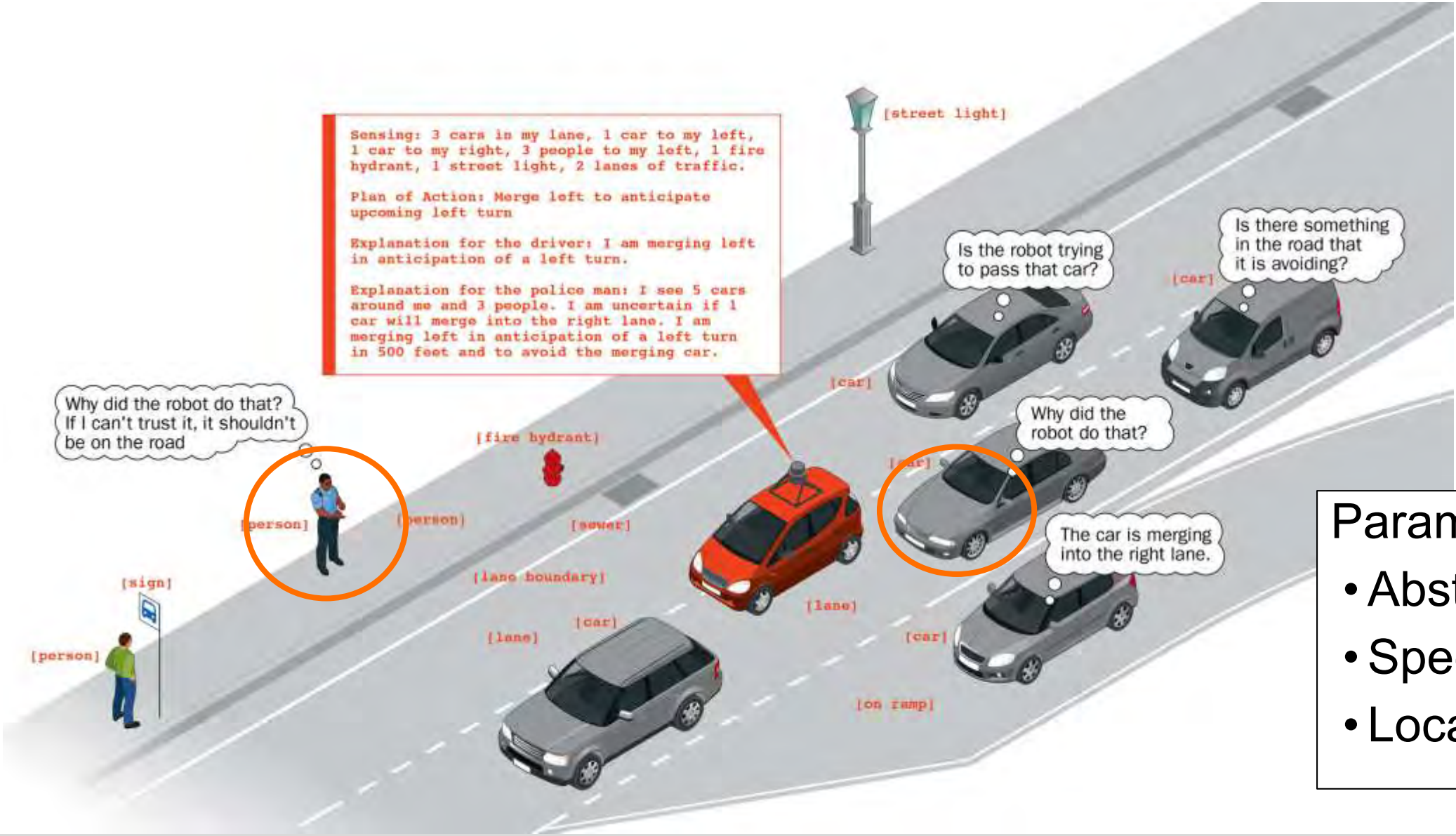
Challenge: Different Preferences and Perspectives



Parameters

- Abstraction
- Specificity
- Locality

Challenge: Different Preferences and Perspectives



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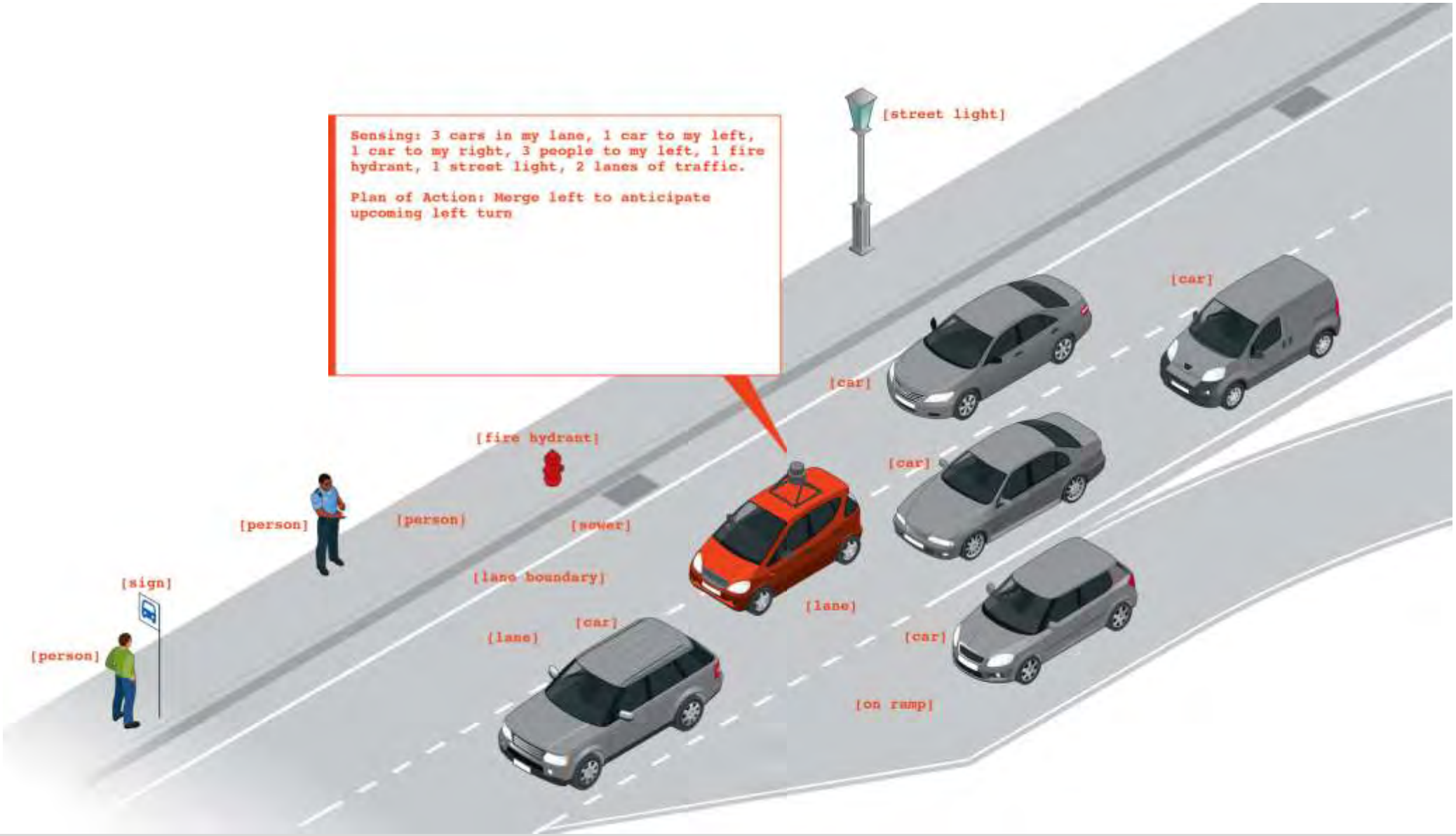
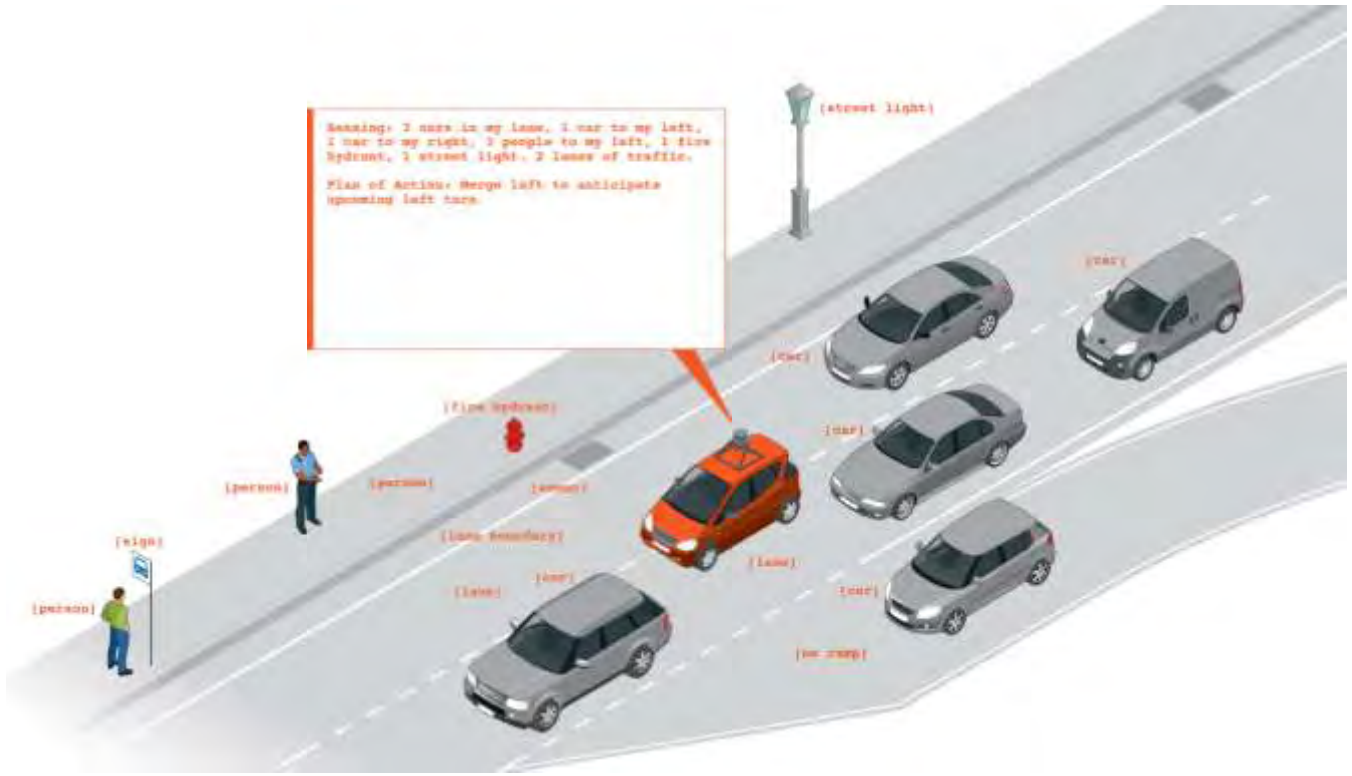
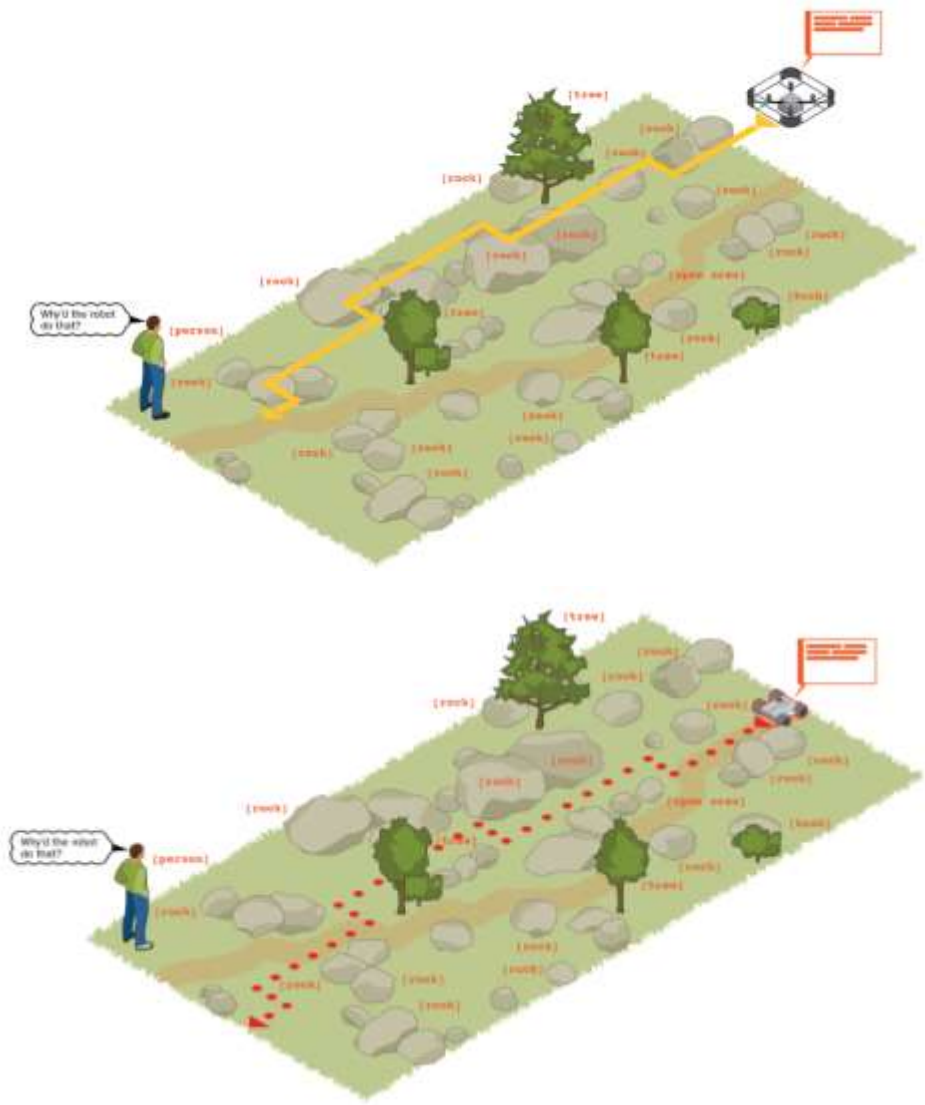
Challenge: Scalability of Dictionaries

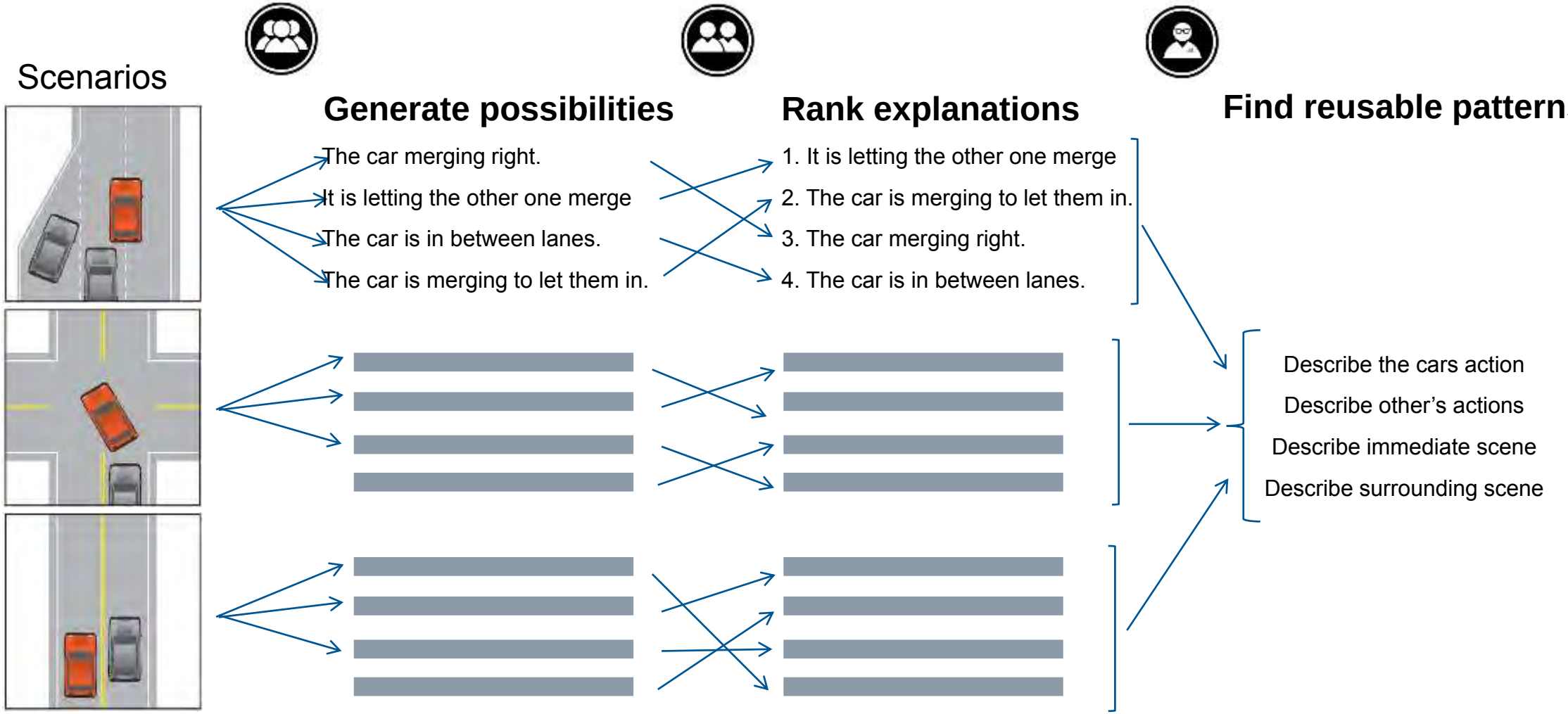


Challenge: Scalability of Dictionaries





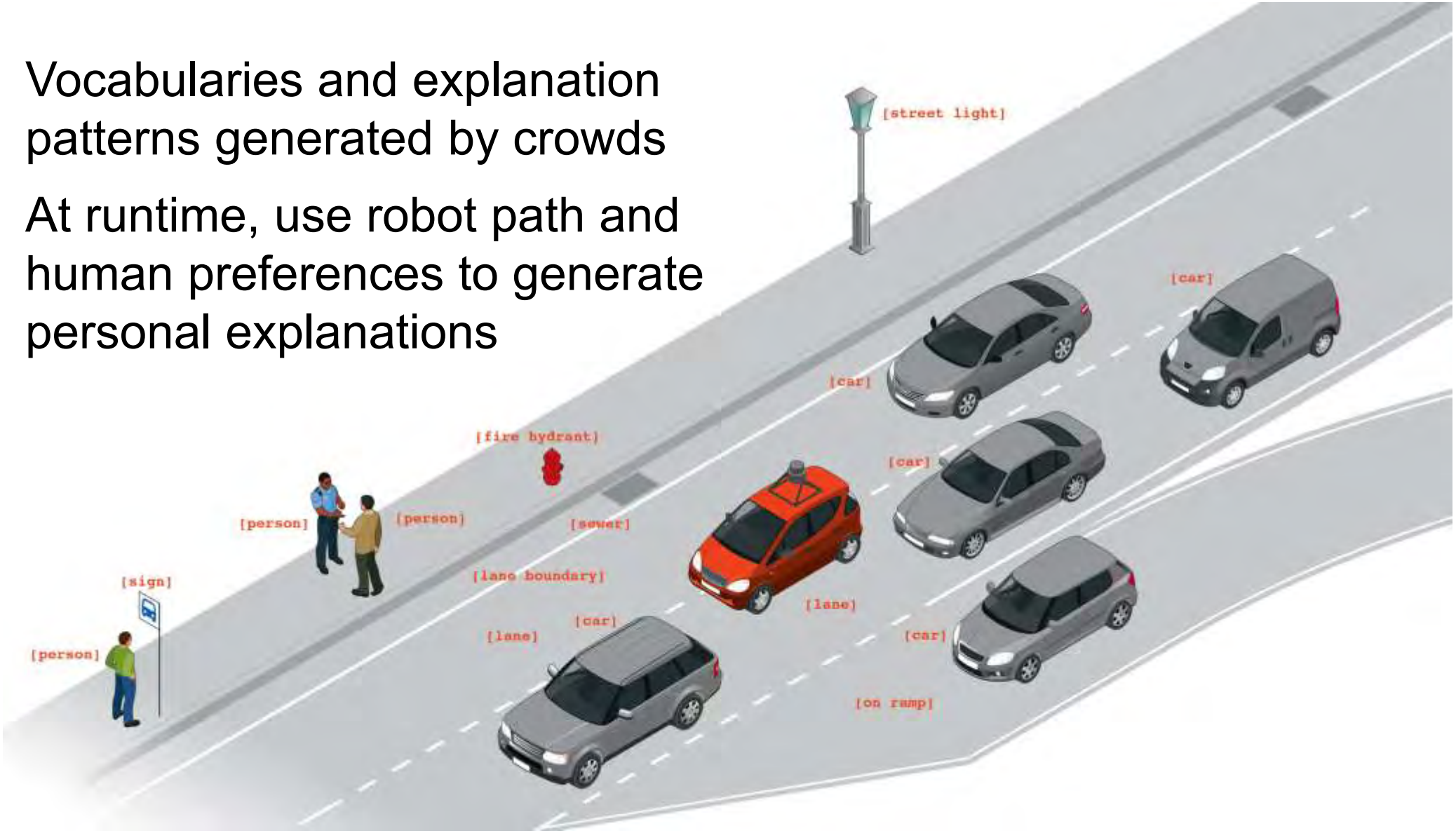
Crowdsourcing Explanation Generation



Putting it Together

Vocabularies and explanation patterns generated by crowds

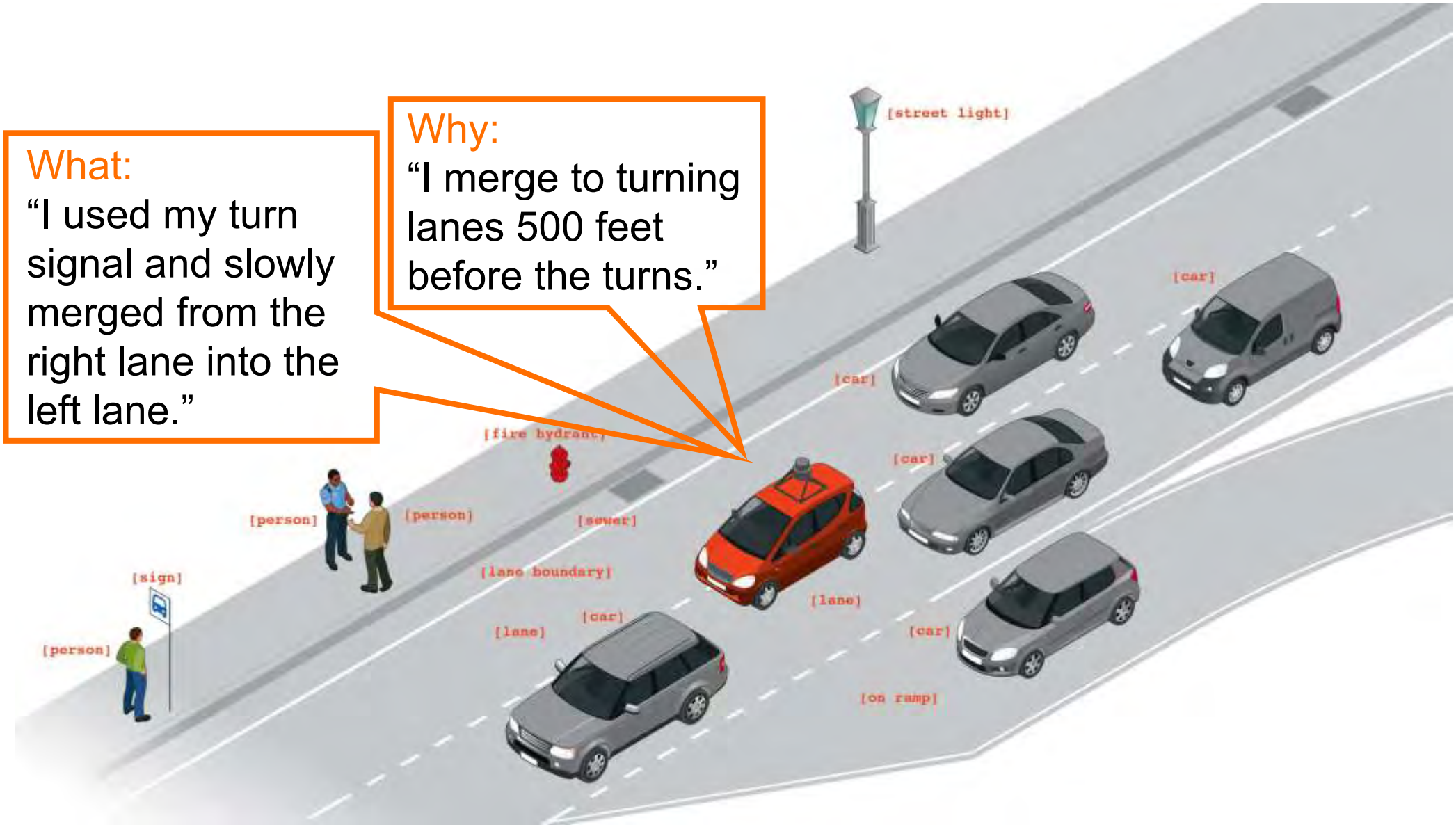
At runtime, use robot path and human preferences to generate personal explanations



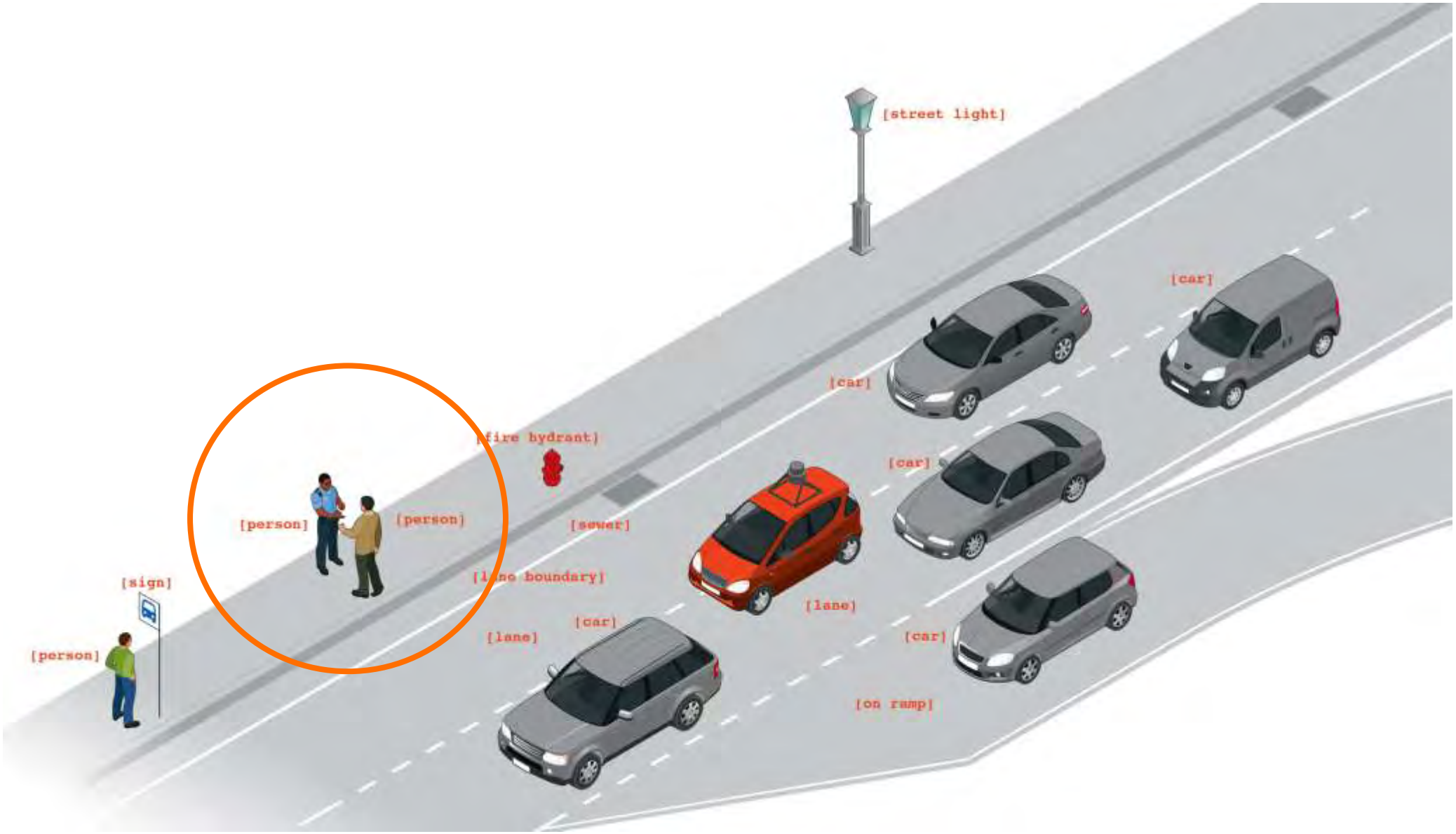
Ongoing Work: What Action vs. Why?

What:
"I used my turn signal and slowly merged from the right lane into the left lane."

Why:
"I merge to turning lanes 500 feet before the turns."



Ongoing Work: Measuring Trust



Next Steps: What Will the Robot Do Next?

Why Did the Robot Do That?

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