SOAFEE Astemo

SOAFEE-based Innovation Platform with Generative AI / AI Agents

Tasuku ISHIGOOKA

Technology Development Functional Division,
Astemo, Ltd.

November 12, 2025

Self-Introduction

Tasuku ISHIGOOKA

石郷岡 祐

- Ph.D. (Informatics from Nagoya Univ.)
- Book: Functional Safety
- Member:
  - SOAFEE/COVESA/AWF/ Open SDV Initiatives
  - ROSConJP2025, APRIS2025

2008 **Hitachi, Ltd. – R&D Group (Joined)**

Automotive : AUTOSAR Classic Platform, FuSa, Multicore Software

2013 **Hitachi Europe GmbH – R&D Group in Munich (Seconded)**

Automotive : Functional Safety, Formal Method

2015 **Hitachi, Ltd. – R&D Group (Returned)**

Automotive : AUTOSAR Adaptive Platform、Autoware Foundation
Logistics : Robot Operating System
Infrastructure : Edge-Cloud Computing

2022 **Hitachi Astemo, Ltd.**
– Technology Development Functional Division (Seconded)

Automotive : Software-Defined Vehicle, Open Innovation

2025 **Astemo, Ltd.**
– Technology Development Functional Division (Transferred)

Automotive :Software-Defined Vehicle, Open Innovation, GenAI/AI agent

Astemo
Mobility Beyond

Contents

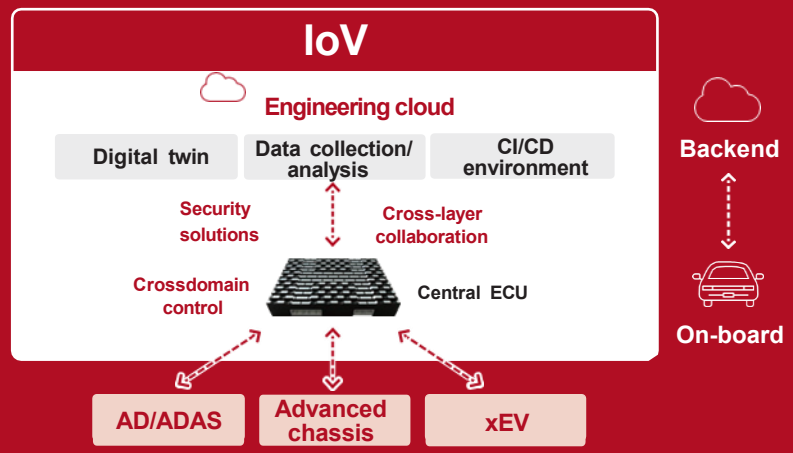
1. Company Introduction
2. Internet of Vehicles (IoV) Platform
3. Main Use-case of Virtual Environment at Astemo
4. SOAFEE Utilization in Idea Creation Phase
5. Conclusion

Our business

Astemo
Mobility Beyond

Solutions + Products

Leveraging cloud development environment and high-performance components, cross-domain control provides the ideal solution for the SDV era.



Solutions

Products

Autonomous Driving / Advanced Driver Assistance Systems

Powertrain Systems

Chassis Systems

Motorcycle Systems

Power Products & Industrial Equipment

Aftermarket Products / Maintenance Products

More information (Web site)

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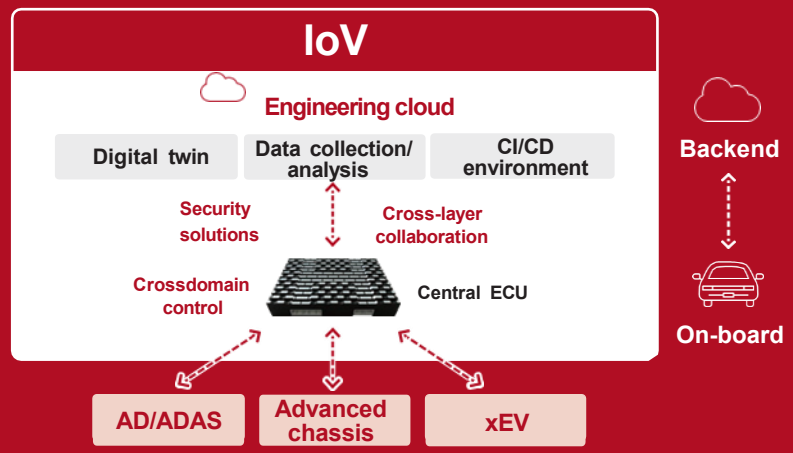

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2. Concept of IoV Platform

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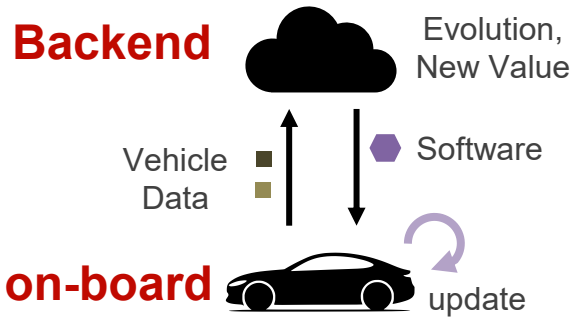
■ **Reference platform for realizing evolution cycle and customizable** for OEM products.
■ Accelerating co-creation for idea creation of new product/service and **PoV/PoC for mass production**.

■ Features

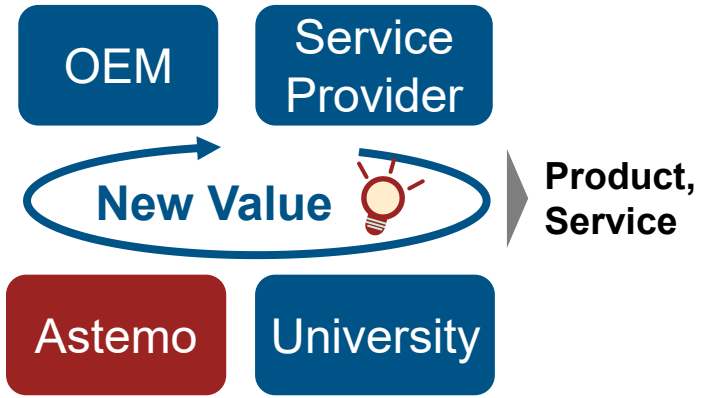
1. **On-board x Backend**
   Astemo x Cypremos
2. **Zero-Day Start**
   Reference Platform & Customization
3. **Value First Dev.**
   Co-creation x AI
4. **Life Cycle Support**
   PoV/PoC – Mass Production – Next
5. **Open Platform**
   Community, Data Business Support

ML: Machine Learning, CI: Continuous Integration, CD: Continuous Delivery

Vision: Evolving Vehicle



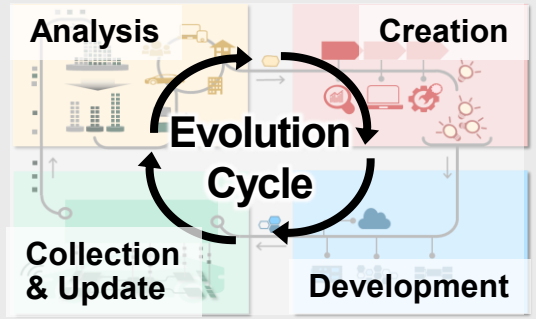
Co-creation



Requirement
Collaboration
Platform Share

Internet of Vehicle Platform

- Data Understand
- Data Collection
- MLOps (shadow)
- Software Update
- Cloud Offload



- Digital Consulting
- Digital Workspace
- Cloud-native
- Cloud CI/CD
- Open Software (Linux, ROS2, AUTOSAR)

2. Concept of IoV Platform

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Mobility Beyond

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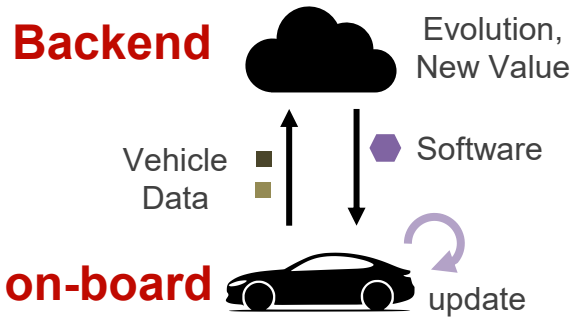

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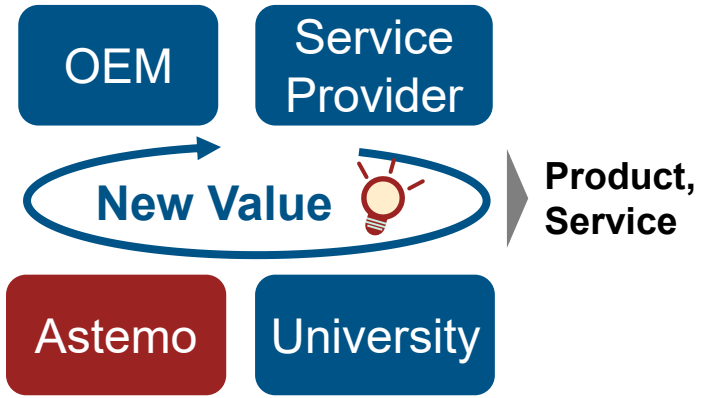

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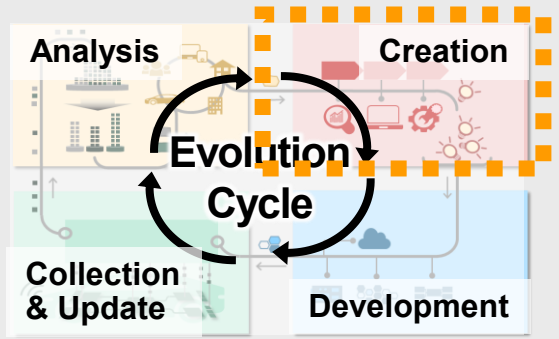

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3. Main Use-case of Virtual Environment at Astemo

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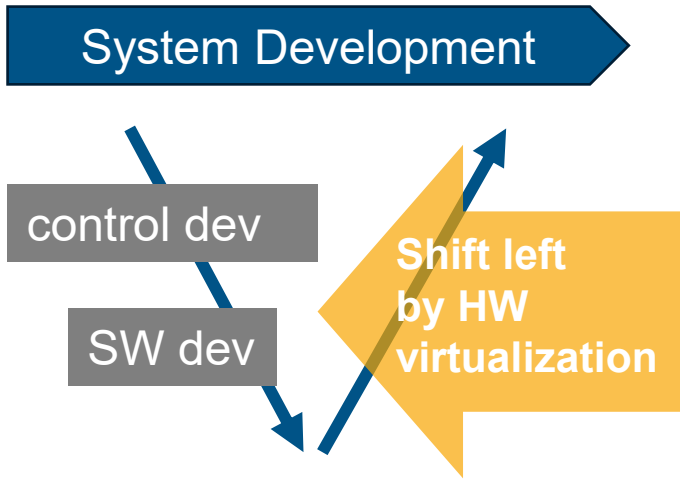
- **Traditional use-case** of virtual environment contributes efficient software development.
- **In value-first development**, virtual environments are also used for **efficient PoV/PoC.**

Software Development Phase

■ Purpose
Accelerate SW development without HW

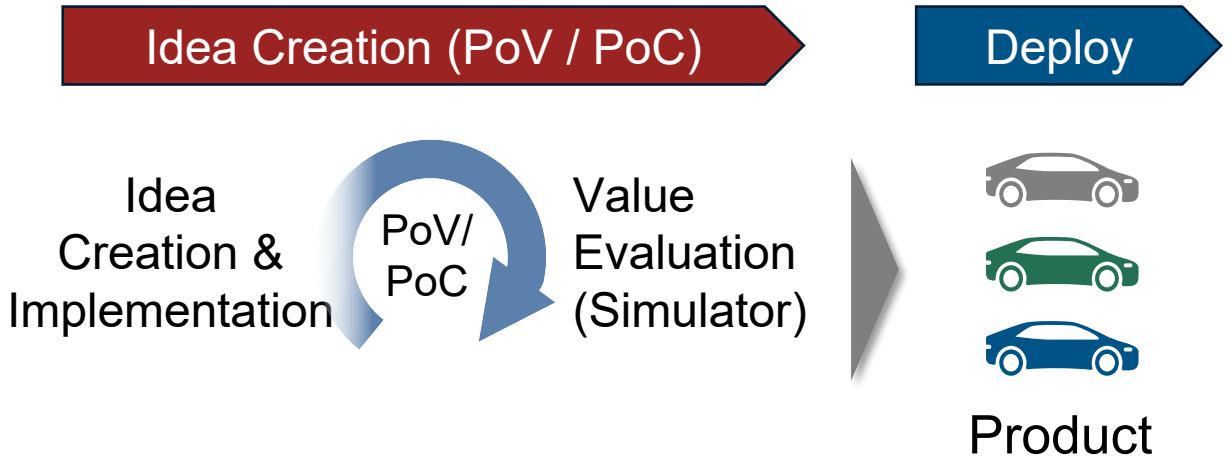
■ Reason
Delay decision on HW selection as much as possible



Idea Creation Phase (Value-First Development)

■ Purpose
Accelerate Idea development by virtual environment

■ Reason
- Evaluate “value” of Idea in virtual environment
- Reduce effort needed for deployment



PoV: Proof of Value, PoC: Proof of Concept

3. Main Use-case of Virtual Environment at Astemo

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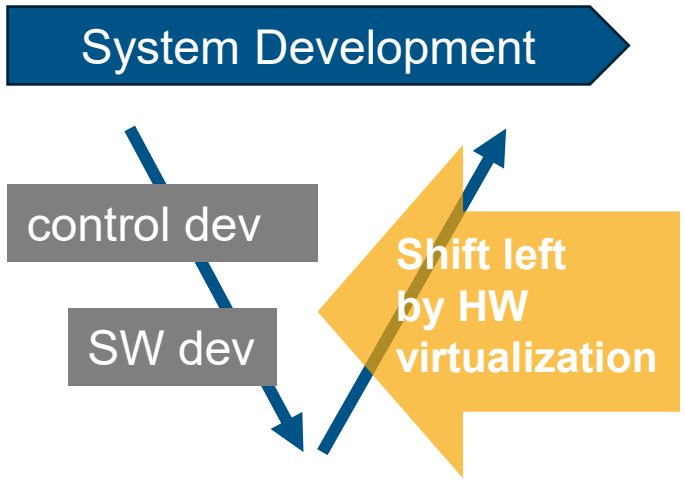

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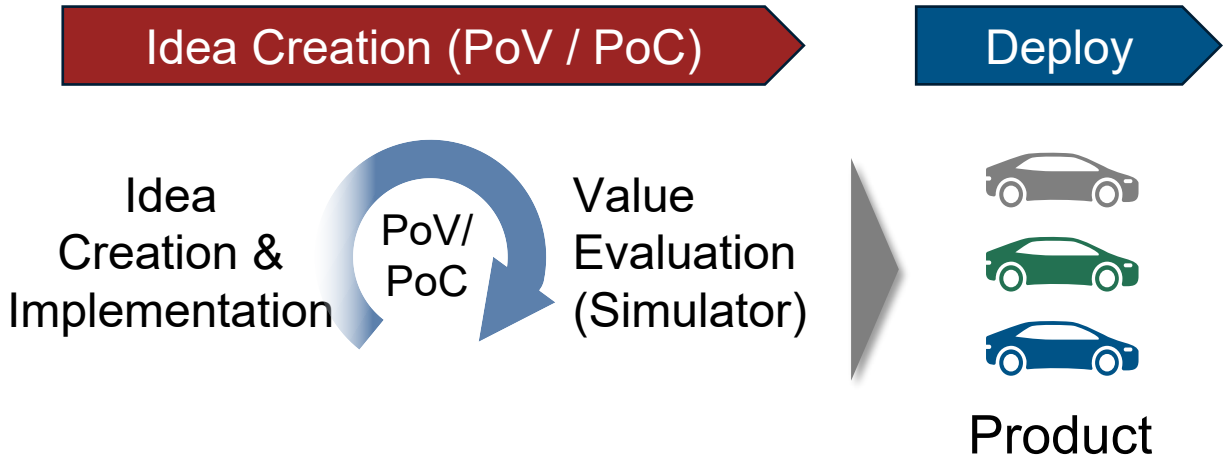

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4-1. Idea Creation and Evaluation: Digital Consulting

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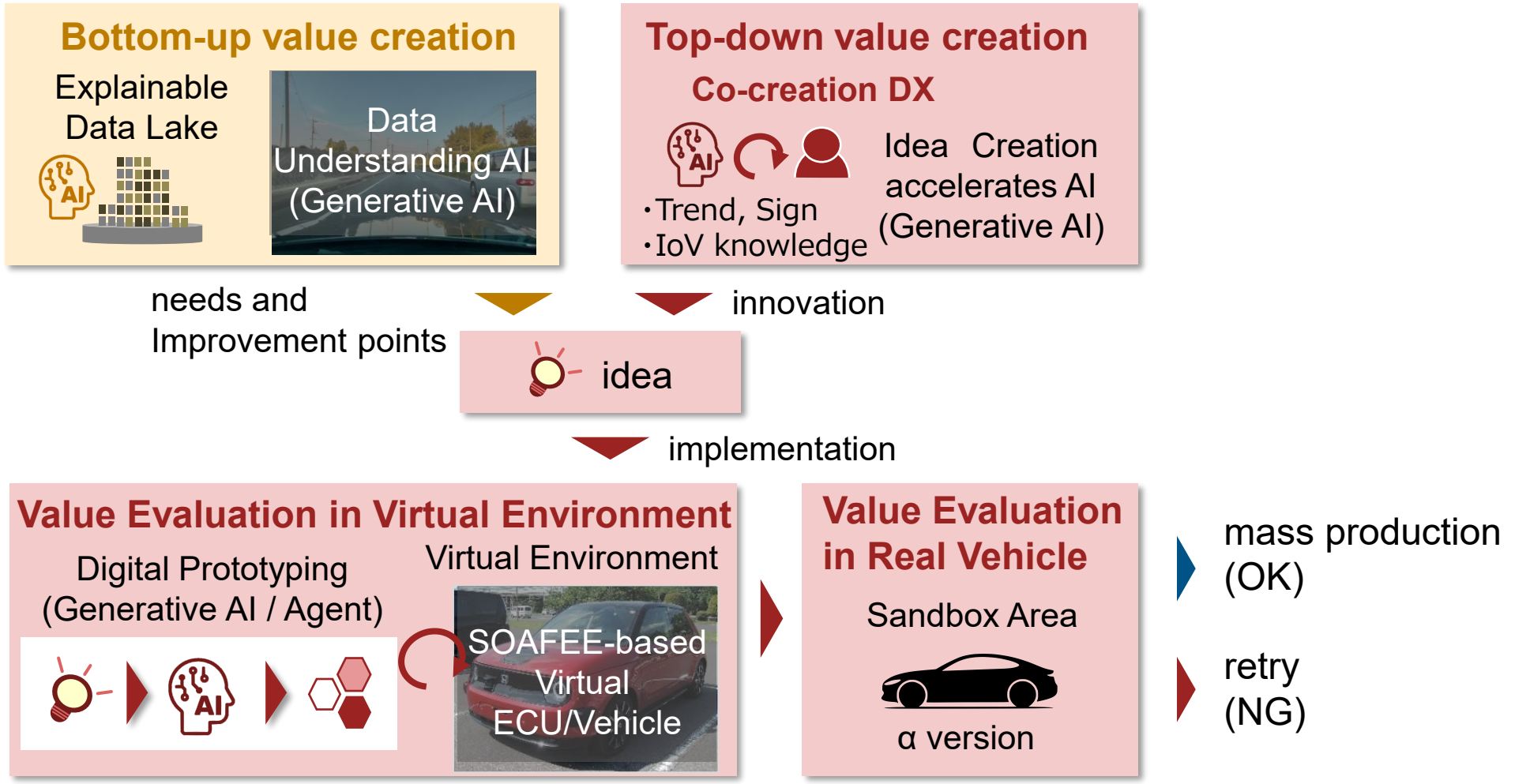
■ **Digital Consulting Technology creates new SDV ideas from both bottom-up and top-down aspects, and enables early value evaluation /w virtual environment.**



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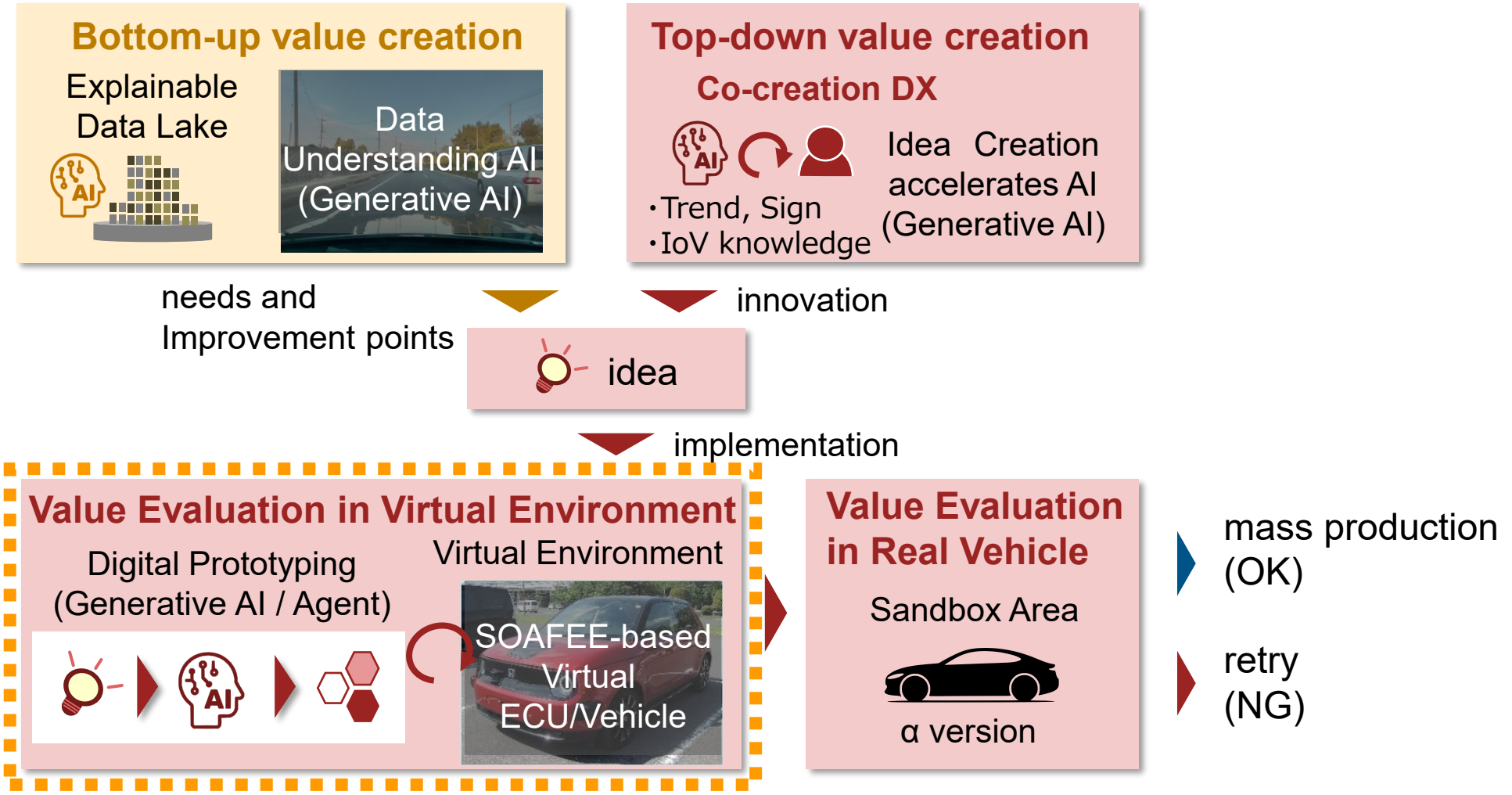


4-2. Digital Prototyping : Overview

■ **The technology enables to rapidly realize ideas that identify needs. It automatically performs software development, test execution, and validation according to requests using Gen AI.**

Digital Prototyping

Enable software generation from natural language
Prompts based on Tree of Thoughts

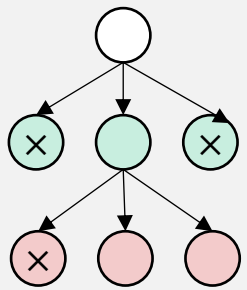
Request
Accelerate and decelerate even more smoothly.

Gen-AI

Software　Test Scenarios

+ Prompt

Prompt Structure
Tree of Thoughts



Autoware

Planning
31 Modules

Related Modules
motion_velocity_smoother
behavior_velocity_planner
・・・

1372
parameter

parameter
Normal.max.acc: 0.8 (1.0)
Normal.max.jrk: 0.8 (1.0)
・・・

CARLA

Scenario runner
94 scenarios

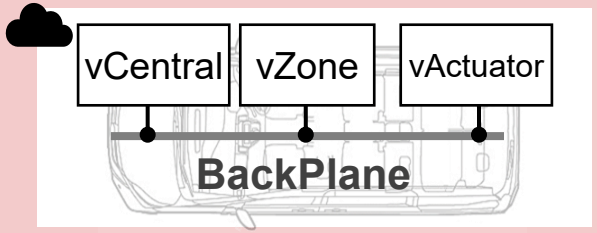
Adverse effects
Scenario exclusion

Scenario runner
Post-reduction
scenario

・Software
・Scenario

Virtual Environment

Early value verification in a virtual vehicle environment equipped with IoV PF.



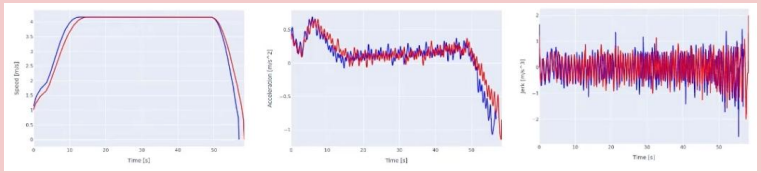
Execution log

request

Data Understanding AI

Gen-AI

Analyze the execution log and explain the contents & determine whether to fulfill a request or not



Blue: Default

4-3. Digital Prototyping : Demo 1

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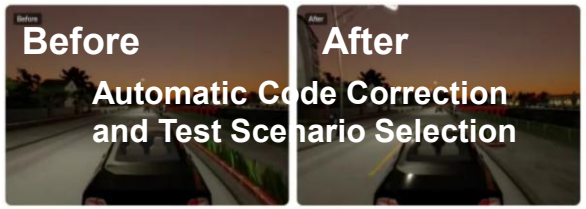
Request: “Accelerate and decelerate even more smoothly.” To satisfy the request, the system extracts necessary modification parameters, and evaluates behavioral changes before and after.

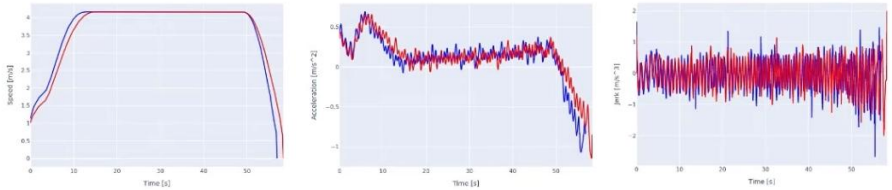
■ Demo Overview

Request (Input)
Accelerate and decelerate even more smoothly.



analyze and evaluate test result

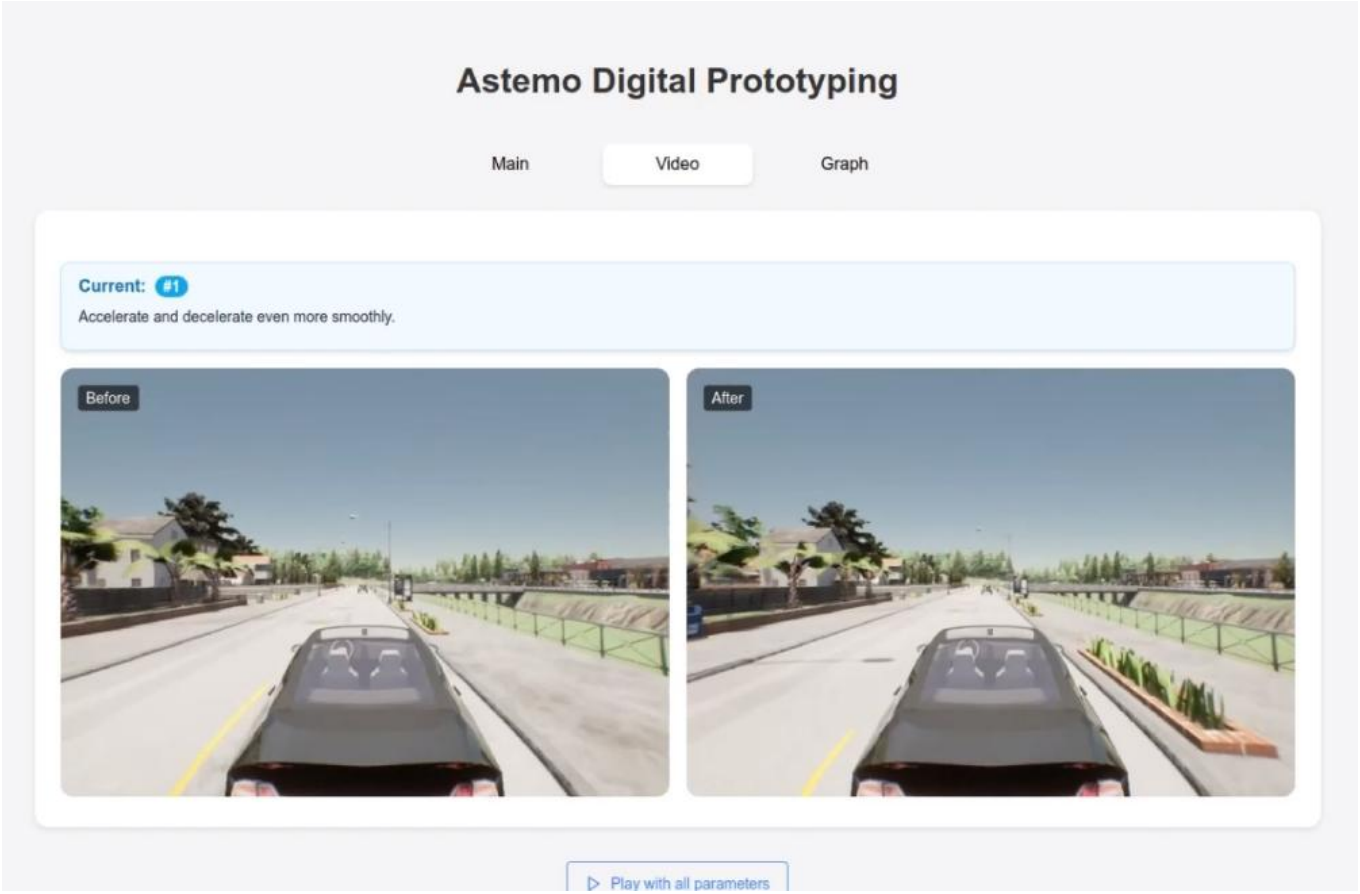
Blue: Before, Red:After



Evaluation Result

Overall evaluation: Overall, it was confirmed that the implementation of the Request improved the smoothness of acceleration and deceleration, resulting in enhanced overall driving performance.

■ Demo Video



4-4. Digital Prototyping : Demo 2

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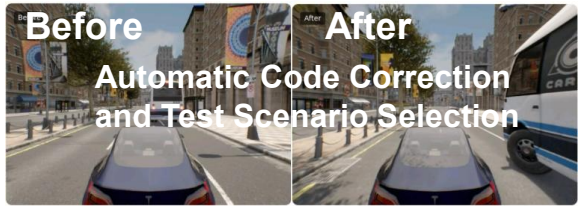
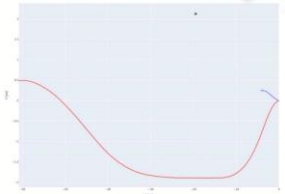
Request: “Pass or go around stopped bus.” To satisfy the request, the system extracts necessary modification parameters, and evaluates behavioral changes before and after.

■ Demo Overview

Request (Input)
Pass or go around stopped bus.





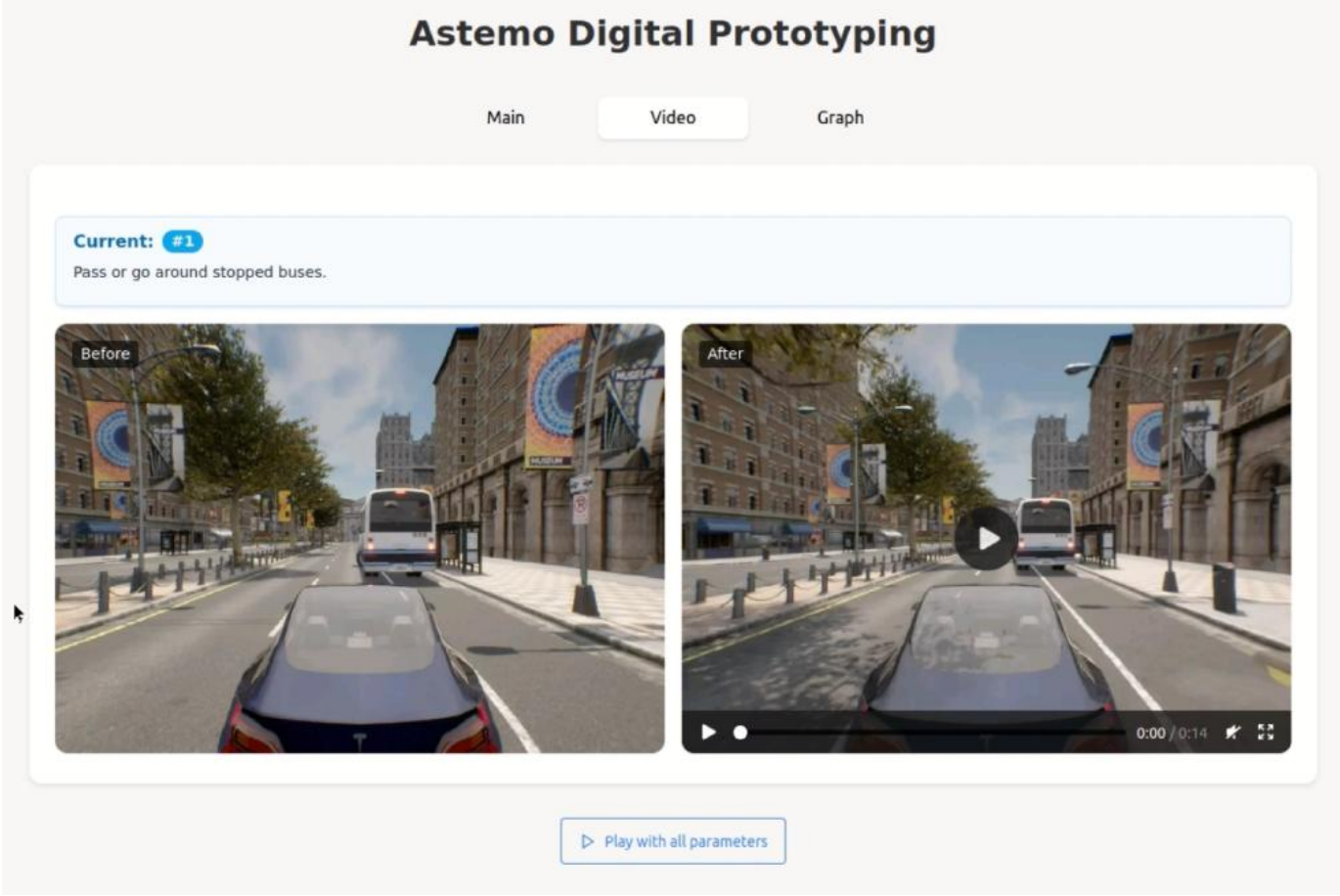
Automated Test Result Interpretation and Requirement Satisfaction Evaluation

Blue: Before, Red:After

Evaluation Result

・**Control Data**: Changes in speed, acceleration, and steering angle were observed, confirming that the vehicle was performing an avoidance maneuver for the bus.
・**Camera Image**: Confirmed that the vehicle avoided the bus and safely changed lanes to proceed.
・**Overall evaluation**: Based on the above, it is assessed that the request was handled appropriately.

■ Demo Video



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We introduced “SOAFEE-based Innovation Platform with Generative AI / AI Agents”.

- Concept of IoV Platform
- Main Use-case for Virtual Environment
- Digital Consulting / Digital Prototyping

We welcome further SOAFEE collaboration partner.

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