

Middleware development environment for ECU development

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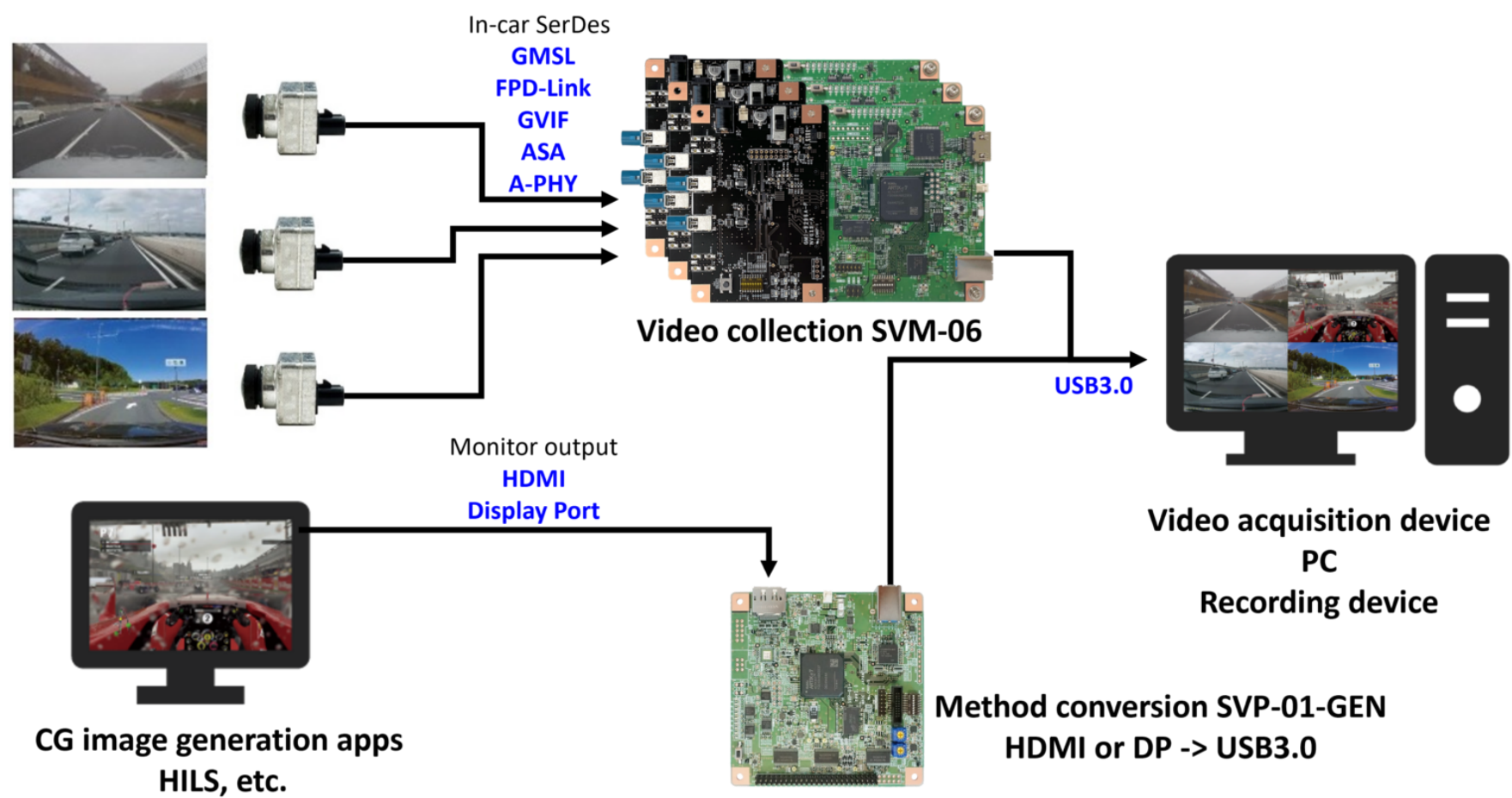
Our SV Series boards are widely used across various phases of autonomous driving system development. Specifically, in the core area of ECU development, our solutions enable both early-stage development (without the need for actual cameras or vehicles) and highly precise, reproducible verification. To enhance usability, we continually add new features in response to the evolving imaging environment.

The SV Series is essential for the following three phases of ECU development:

- 1. Video Data Acquisition
- 2. Software & Hardware Simulation
- 3. ECU Manufacturing Test

1. Video Data Acquisition

Generating and collecting real-world driving footage and CG imagery



- ✓ Real Camera Video Capture:

By intercepting the connection between the actual vehicle camera and the ECU (through-output), RAW data can be saved to a PC without any degradation.

- ✓ Synchronized Recording:

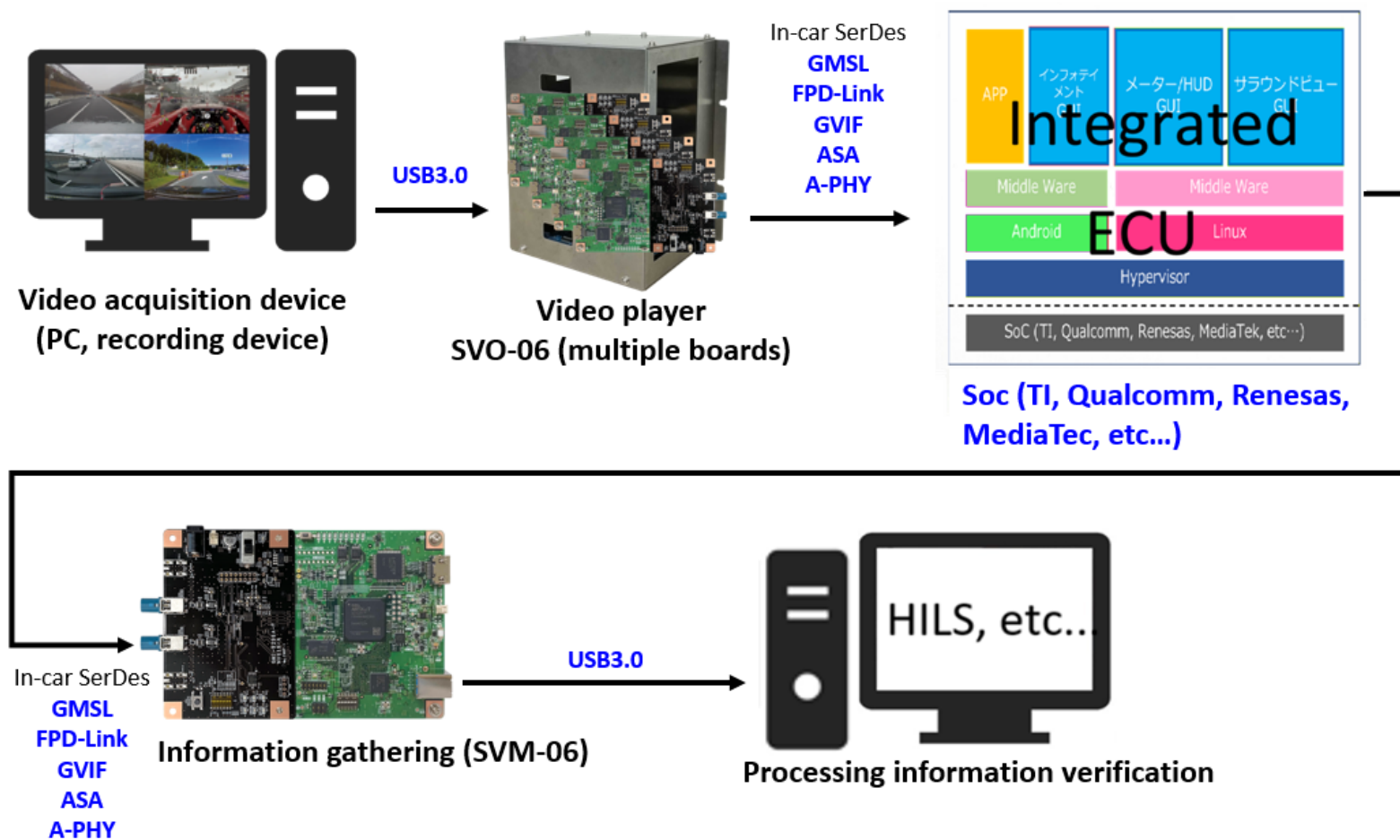
In addition to video data, control signals (I2C, etc.) and vehicle network data (CAN/LAN) are recorded with synchronized timestamps. This allows for precise data linking, such as "the camera view at the exact moment the brakes were applied".

- ✓ CG Video Conversion:

Computer-generated (CG) images created in simulators are converted into the same data formats as real cameras (e.g., MIPI) and stored as test data.

2. Software & Hardware Simulation

Emulating real cameras with SVO-06 / Collecting images and data with SVM-06



This stage involves verifying algorithm and hardware performance by inputting video data from a PC into the ECU, eliminating the need for physical cameras.

- ✓ Real Camera Emulation:

As previously described, our generator boards are used to feed recorded video into the ECU as camera signals, such as MIPI.

- ✓ HILS (Hardware-in-the-Loop Simulation) Integration:

Real ECUs are integrated into a real-time simulation environment to achieve closed-loop testing.

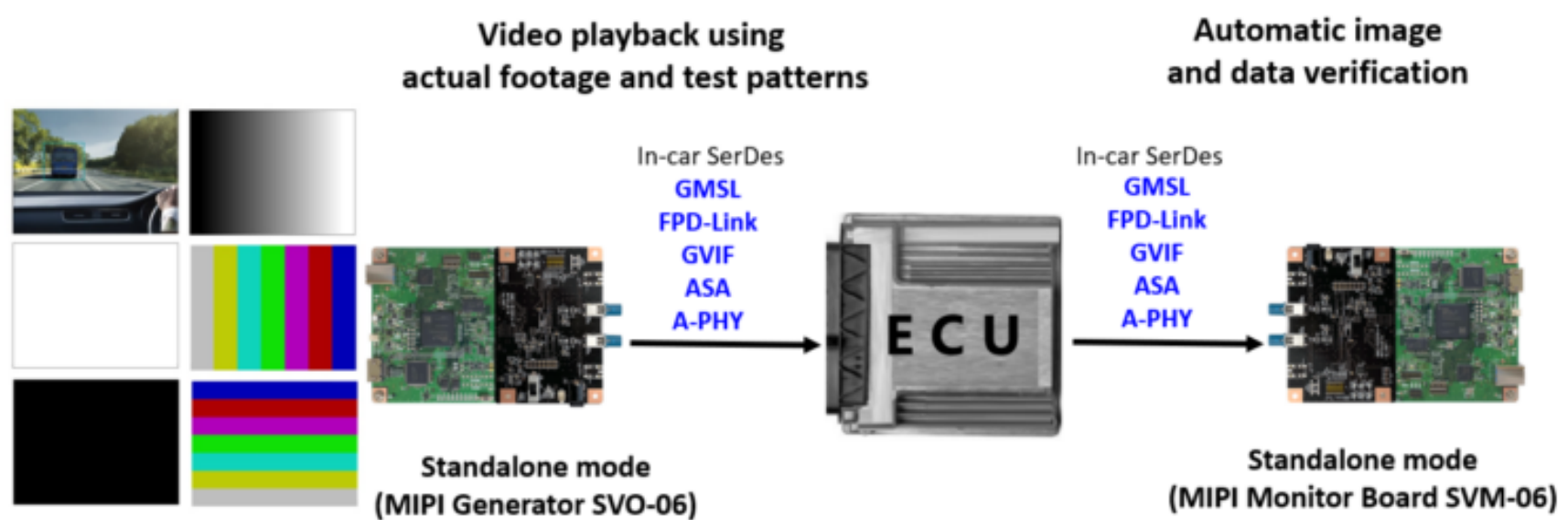
- ✓ Improved Debugging Efficiency:

Specific accident scenarios or adverse weather conditions can be repeatedly reproduced in an office environment without the need for actual vehicle testing.

3. ECU Manufacturing Test (Final Pre-shipment Verification)

Ensuring the developed ECU functions correctly during the mass-production process.

This is the final quality assurance stage to confirm the ECU operates as intended.



- ✓ Application to Shipping Inspections:

On the production line, the system rapidly verifies that the ECU correctly recognizes input signals and performs the expected processing.

- ✓ Automated Inspection Systems:

By integrating SV Series boards into production equipment, the process from video input to pass/fail determination is automated, preventing human error and reducing tact time.

Equipment Used

- [MIPI Monitor Board SVM-06](#)
- [MIPI Generator SVO-06](#)
- [Parallel Generator SVP-01-GEN](#)
- [SeDes Board \(GMSL, etc.\): Made-to-order](#)

Example SV Series Product Configuration

Video Capture: Synchronized capture of 4 channels from GMSL cameras

- [MIPI Monitor Board SVM-06](#) x 4 boards
- [GMSL Deserializer Board GMI-96716A-F](#) x 10 boards (MOQ=10)

(In addition to the cost of the boards, there is a separate charge for SVM-06 synchronization support.)

Video Playback: For 4-channel synchronized output with GMSL camera emulation

- [MIPI Generator SVO-06](#) x 4 boards
- [GMSL Serializer Board GMO-96717-F](#) x 10 boards (MOQ=10)

(In addition to the cost of the boards, there is a separate charge for SVO-06 synchronization support.)

* For technical inquiries or pricing information Please feel free to [contact](#) us.