

ANTYCIPI

AUTOMOTIVE *SIMULATION*



Immersive Simulation and Extended Reality for the Automotive Development Lifecycle

Helping engineering teams resolve critical questions before physical hardware exists.

See the future

 **ST Engineering**

Automotive development is evolving faster than traditional physical testing can keep pace. Engineering teams are under pressure to validate more, earlier, and with less reliance on physical hardware. Antycip applies immersive simulation, Extended Reality (XR), and high-performance visual systems across the automotive development lifecycle, from early design through to engineering validation, to help teams resolve engineering questions before physical hardware exists.



THE *AUTOMOTIVE* CHALLENGE

Modern automotive programmes face a common set of pressures:

- > Electrification and new powertrain architectures, introducing packaging, thermal and vibration characteristics that differ fundamentally from established combustion platforms.
- > Advanced Driver Assistance Systems (ADAS) validation, covering an expanding range of sensor, control, and edge-case scenarios that are difficult and costly to test physically.
- > Autonomous vehicle development, which depends on repeatable, controllable test environments that physical track testing alone cannot provide.
- > Shorter concept-to-prototype cycles, driven by competitive pressure to bring new models and features to market faster.
- > Reduced reliance on physical testing and track time, as cost and sustainability pressures drive manufacturers to validate more decisions digitally.

To remain competitive, Original Equipment Manufacturers (OEMs) and motorsport teams rely on high-fidelity simulation environments that enable engineering decisions earlier, faster, and with greater confidence. Addressing these challenges requires more than a single technology. It requires a connected set of capabilities that carries a vehicle from digital concept through to physical validation.



WHAT WE OFFER: SIMULATION CAPABILITIES ACROSS THE AUTOMOTIVE DEVELOPMENT LIFECYCLE

Antycip brings together immersive visualisation, real-time simulation and integrated hardware to support critical stages of the automotive development lifecycle, from early design review and engineering validation to vehicle performance optimisation.



VISUAL AND IMMERSIVE PROTOTYPING

Before a vehicle is validated, it first needs to be reviewed and agreed at scale.

> Virtual Reality (VR) and XR workflows support full-scale digital model reviews earlier in the design process.

> This reduces reliance on physical prototypes and supports faster, more collaborative iteration across design teams working from different sites.



ENGINEERING DRIVING SIMULATION AND HUMAN-IN-THE-LOOP VALIDATION

Once a design is agreed, it moves from being reviewed to being tested against real engineering conditions.

> Real-time vehicle and environment simulation supports engineering-focused evaluation of vehicle dynamics, control systems, and driver perception.

> Human-in-the-loop validation covers cockpit ergonomics, visibility, and driver comfort assessment within the same simulation environment.

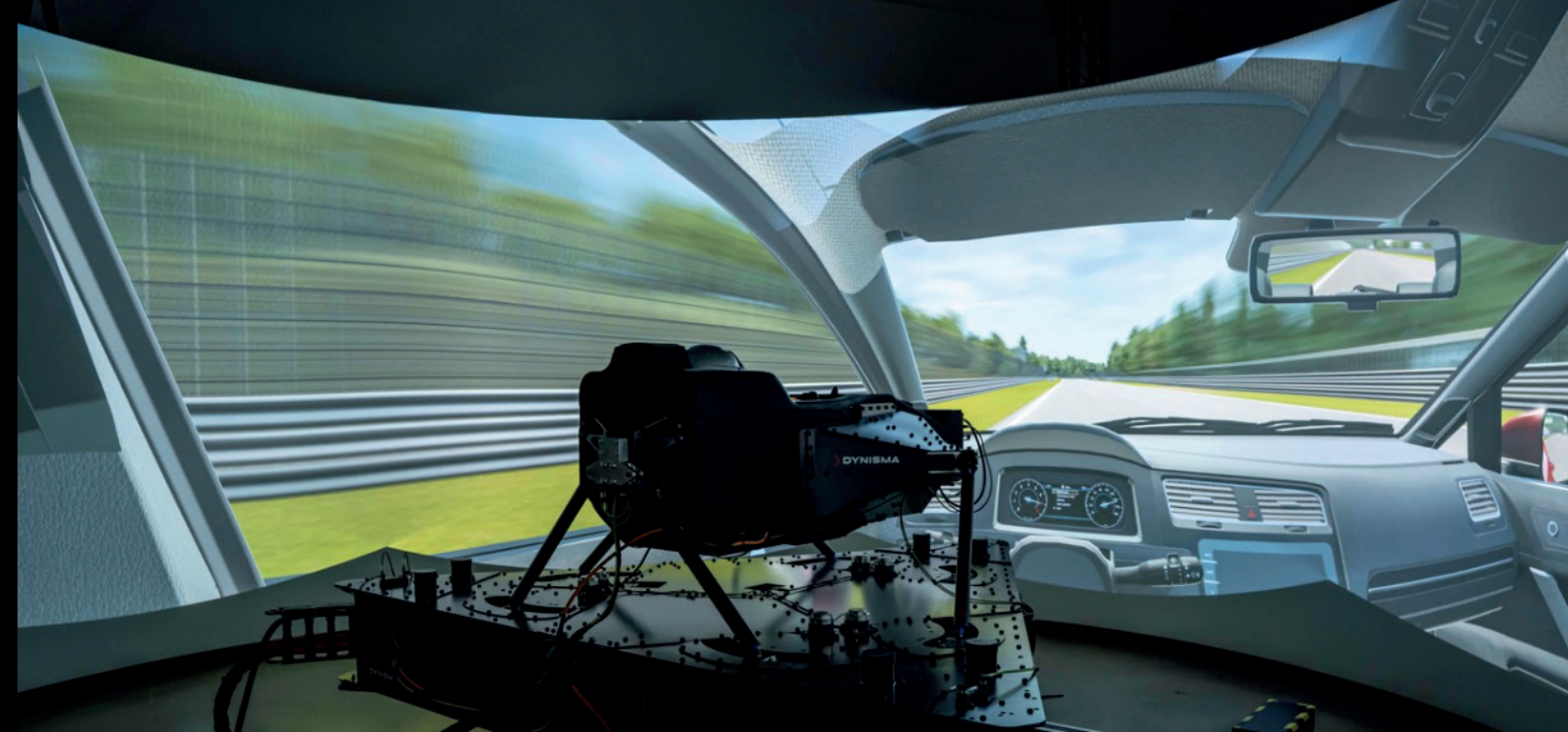


MOTORSPORT AND VEHICLE OPTIMISATION WORKFLOWS

The same simulation environment extends directly into competitive use, where margins are measured in tenths of a second rather than design preference.

> These simulations are used as engineering tools to analyse vehicle behaviour on virtual circuits and test tracks, supporting performance optimisation and reduced physical track time.

> The same approach extends beyond motorsport to broader research and development work, wherever repeatable, data-driven testing delivers more value than one-off physical trials.



MOTION, SENSORY AND HUMAN INTERACTION



MOTION INTEGRATION

Accurate simulation depends on what a driver feels as much as what they see.

> We integrate our visual and simulation systems with specialist motion platforms, such as Dynisma, to support accurate evaluation of vehicle dynamics and driver perception.

> We engineer the visual display systems to match the fidelity and latency each motion platform demands, ensuring close technical alignment between what a driver sees and what they feel.



NOISE, VIBRATION, AND HARSHNESS (NVH) SIMULATION

Sensory validation also covers how a vehicle sounds and feels in everyday use, not only how it handles under test conditions.

> NVH simulation supports the evaluation of engine, road and aerodynamic noise, alongside structural vibration, harshness and other sensory feedback.

> Simulating NVH early in development supports informed design decisions before costly physical builds.



HUMAN MACHINE INTERFACE (HMI) EVALUATION

Sensory validation is not limited to motion and sound. It extends to how a driver interacts with the vehicle directly.

> Simulation supports evaluation of display panels, infotainment layouts, and cockpit controls within a realistic driving context.

> The same principle applies to broader ergonomics and user experience (UX) assessment alongside HMI-specific testing.



DISPLAY INTEGRATION AND HFR



DISPLAY AND HARDWARE INTEGRATION

The performance of any simulation environment ultimately depends on the physical systems that deliver it.

- > Immersive displays, LED, projection, or headset-based XR are configured to the scale and fidelity each project requires, from a single desktop review to a full-scale immersive environment.
- > Hardware is selected around the engineering requirement first, with the display technology chosen to fit.



HIGH FRAME RATE (HFR) FOR AUTOMOTIVE DRIVER-IN-THE-LOOP

In Driver-in-the-Loop simulation, frame rate plays a critical role in responsiveness, visual fidelity and the relationship between visual and motion cues.

- > Higher frame rates reduce latency and improve motion cue fidelity, particularly for high-speed driving scenarios.
- > This complements Antycip's dedicated HFR expertise, applied here specifically to automotive use cases.

Together, these capabilities support automotive development from early digital design and evaluation through to engineering validation and track-based testing.



OUR *APPROACH*

Our automotive approach draws on Antycip's established expertise in simulation, immersive visualisation and complex systems integration, applied to the specific requirements of automotive engineering.

+ **We integrate** hardware, software, and motion platforms into one engineered environment, instead of treating automotive as a series of separate installations.

+ **We configure** each solution to the fidelity and budget a project needs, not a fixed template applied across every client.

+ **We combine** established simulation expertise with automotive-specific technologies and specialist partners, enabling us to address requirements ranging from immersive design and engineering evaluation to demanding Driver-in-the-Loop applications.

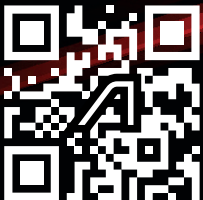


AUTOMOTIVE *SIMULATION*

Dynisma Motion platform integration

Antycip provides the Image Generation and visual display systems that integrate with Dynisma's high-performance motion platforms, engineered to work in step with their precision so what a driver sees stays perfectly synchronised with what they feel. Latency between the simulation and the platform's response is reduced to a matter of milliseconds, a level of coupling that demands close technical alignment between our visual systems and their motion hardware, delivering the fidelity that engineering and motorsport training work demands.

**Visit
our website**



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 **ST Engineering**