



HARMAN'S SELECTION OF VI-GRADE DRIVING SIMULATION SOLUTION

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AGENDA

1. Introduction
2. About Harman
3. Harman's Automotive Strategy
4. New Strategy, New Needs
5. The selection process – Why VI-Grade?
6. Harman / VI-Grade: The end goal

HARMAN / VI-GRADE PARTNERSHIP



INTRODUCTION

- **Joined Harman Automotive in 2010**
 - System validation focused on Bluetooth and connectivity
 - Chrysler RHR System
 - Toyota Extension Box
 - Chrysler CMC
 - System Engineering CPM
 - Subaru Gen 3 Program
 - Stellantis Passenger Display
 - Stellantis R1 Program
 - System Engineering Next Gen Team



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ABOUT HARMAN AUTOMOTIVE

- **30k Employees across 50+ locations covering Automotive, Lifestyle, and Digital Transformation divisions.**
- **Automotive division provides solutions for a variety of car makers.**
 - Car Audio
 - Digital Cockpit
 - Telematics
 - Cloud Services
- **Acquired by Samsung in 2017.**



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HARMAN'S AUTOMOTIVE STRATEGY

- **Originally *project* focused.**
- **New approach adds *product* focused.**
 - New synergies with Samsung to accelerate innovation.
- **Consumer Experiences.
Automotive Grade.**
- **Introduction of a new product portfolio.**
 - Develop products internally.
 - Showcase actual working products, not concept demos.



NEW STRATEGY, NEW NEEDS

- **Move away from traditional V-model.**
 - Need to do more testing and evaluation early on.
 - Bringing products to market faster.
- **A need for repeatability and control.**
 - Control use cases where other actors are required.
 - Control environment conditions.
- **Focus on product development means added emphasis on user experience studies.**
 - Safe environment for evaluation.

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THE SELECTION PROCESS – WHY VI-GRADE?

- **Hardware and software expertise.**
- **Simulated sensor data.**
- **Real-world location data.**
- **Well documented SDK.**
- **Active technical and on-site support.**
- **Competitive Pricing.**

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THE SELECTION PROCESS – WHY VI-GRADE?

- **Hardware and software expertise.**
 - ✓ VI-Grade provides complete solutions which include simulation software, cockpit system, screen, and projectors.
- **Simulated sensor data.**
 - ✓ VI-Grade simulation software provides data to mimic real world conditions allowing Harman to use this data to test a variety of use cases and products.
- **Real-world location data.**
 - ✓ VI-Grade provides numerous digitized locations of real-world locations.
- **Well documented SDK.**
 - ✓ Software includes documentation which allows for easy access to drive simulation data.
- **Active technical and on-site support.**
 - ✓ Harman has been working closely with VI-Grade, meeting in person throughout the entire setup process.
- **Competitive Pricing.**
 - ✓ Harman compared similar solutions and found VI-Grade was the best fit.

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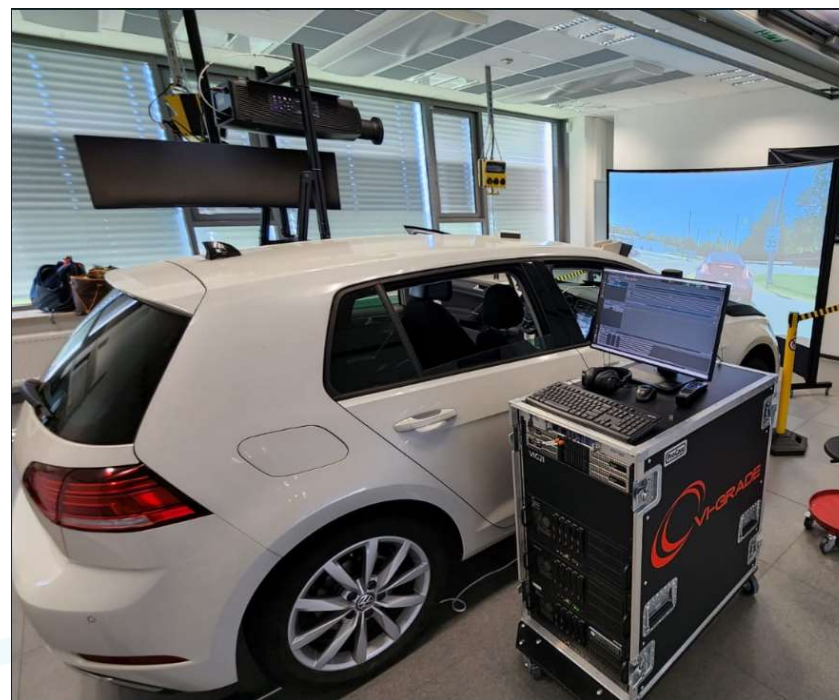
HARMAN /VI-GRADE:THE END GOAL

- **Phase I**

- Test vehicle retrofitted with Harman products.
- VI-Grade's real-world digitized location and driving route replay.
- Both systems connected:
 - VI-Grade WorldSim providing sensor data.
 - Harman's system receiving and acting on the data.

- **Phase 2**

- A drivable simulation solution using the test vehicle with Harman hardware.
- Large wrap around screen and multiple projector system.





THANK YOU

