



Company Introduction

- Mission
- Products
- Customers
- Applications
- Global Coverage



rFpro Mission

To provide the world's leading **simulation software** and **digital content** to **reduce the reliance on** real world testing and training data generation.



rFpro Products

1. Simulation Software
2. Digital Content



World's Most Advanced Simulation Software

- Both ray tracing and real-time rendering options available
- Allows users to match the engineering requirement to the correct simulation option



World's Largest Digital Location Library

180+

We have the largest library of pre-built LiDAR-scanned digital location models

- HD Surfaces
- Ground Truth
- Road Networks



World's Largest Digital Location Library



Proving Grounds



Public Roads



Testing & Race Circuits



Parking Locations

World's Largest Digital Location Library

15

Private proving grounds for
11 different OEMs / Tier 1s
in:

- USA
- Europe
- UK
- Korea
- Japan



ABD Group

- rFpro offices in the **UK, USA, Germany and Japan**, within easy reach of the key players in today's automotive industry
- Additional group company offices in China, USA and Singapore
- Worldwide coverage through our reseller network



8 of the top 10 largest car manufacturers utilise rFpro



Mercedes-Benz



PORSCHE



Applications

rFpro can be used as a **central simulation platform** for multiple engineering departments to perform their **in the loop** testing

Applications

- Vehicle Dynamics & Tyre Modelling
- ADAS/AV
- Human Factors
- Headlights

In The Loop

- Software (Control Strategy & Perception)
- Hardware
- Driver

rFpro Introduction Summary



1. Highest fidelity simulation software with ray tracing capability
2. World's largest digital location library
3. Expert content creation services
4. Global support



High-Definition Tyres in High-Definition Worlds



Introduction

rFpro enables the virtual **tyres** to be **tested and validated** in simulation, accelerating development and significantly **reducing** the prototype costs, reliance for real-world testing and time to market



Benefits of using rFpro for tyre development



Faster



Cost Effective



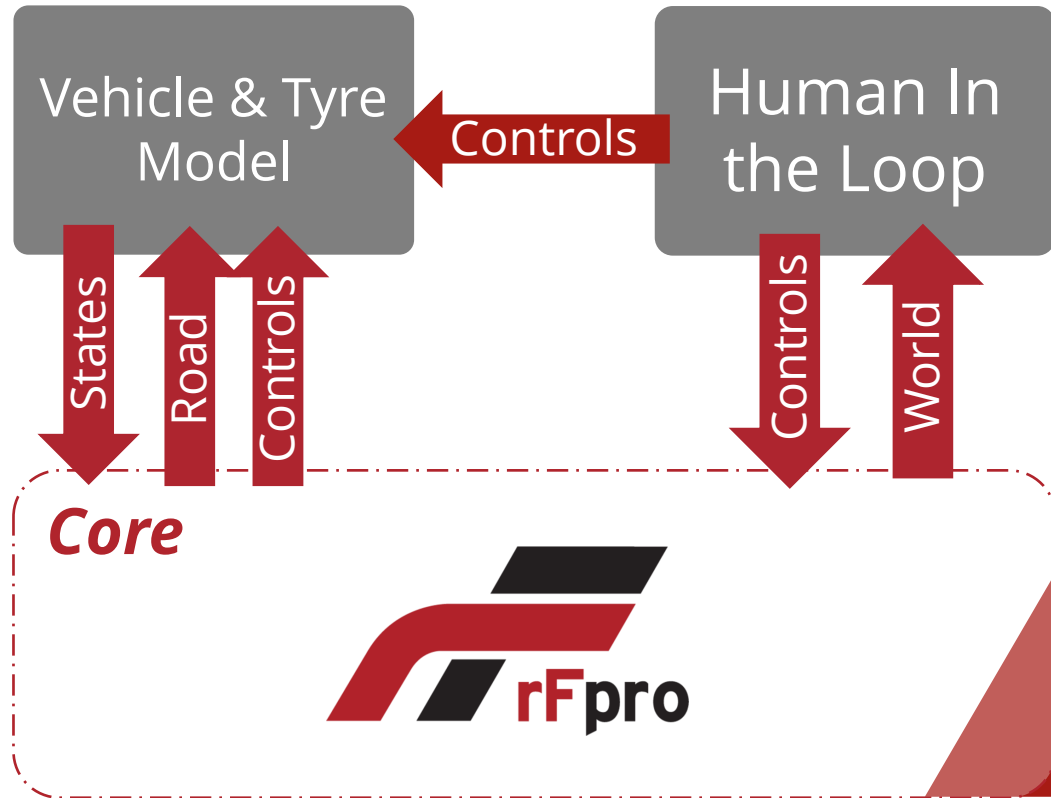
Safe



Scalable



Tyre in the Loop



HD Surfaces

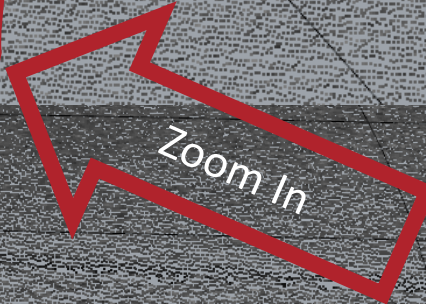
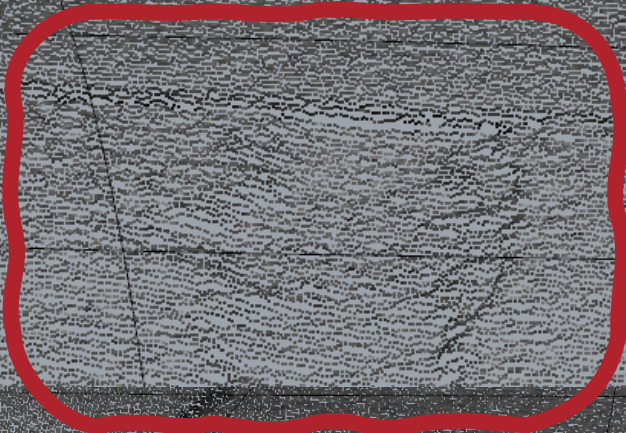
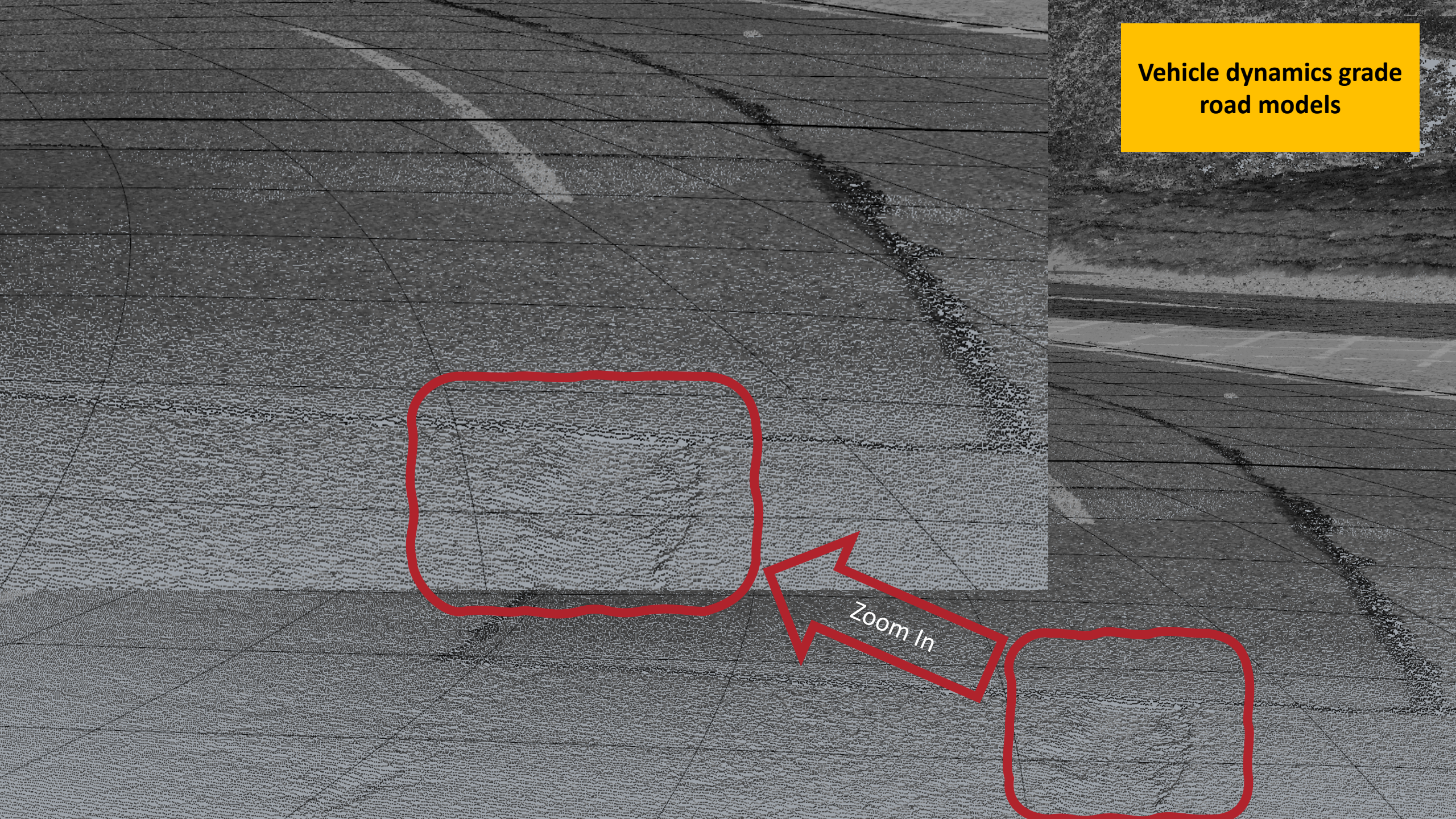
- More realistic
 - Immersion for Driver and Tyre
 - More accurate simulation of tyre – road interaction
 - Sensor development and Training Data generation
- More accurate results



**Vehicle dynamics grade
road models**



**Vehicle dynamics grade
road models**

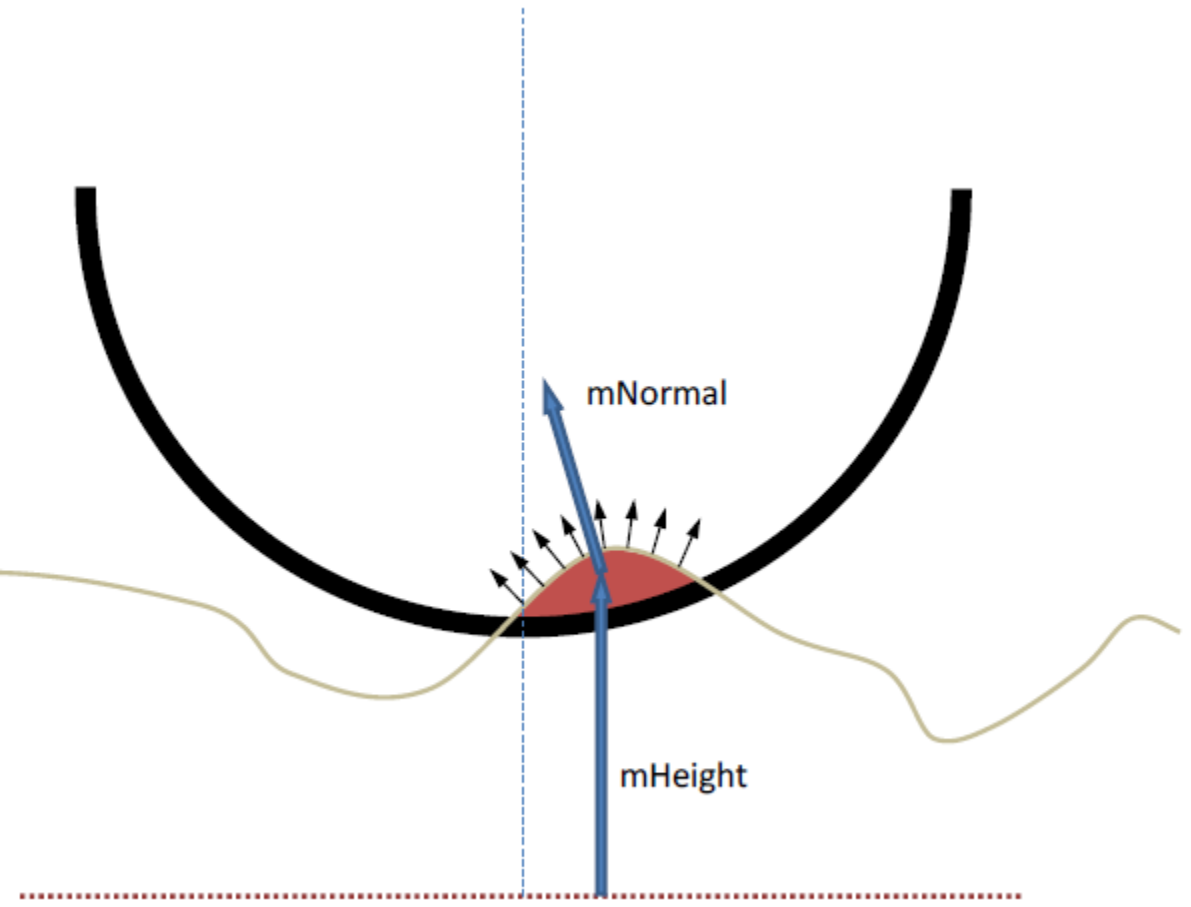


Terrain Server – Volumetric Intersection

- Entire volume of surface
- Average of heights and normal of the intersection are used



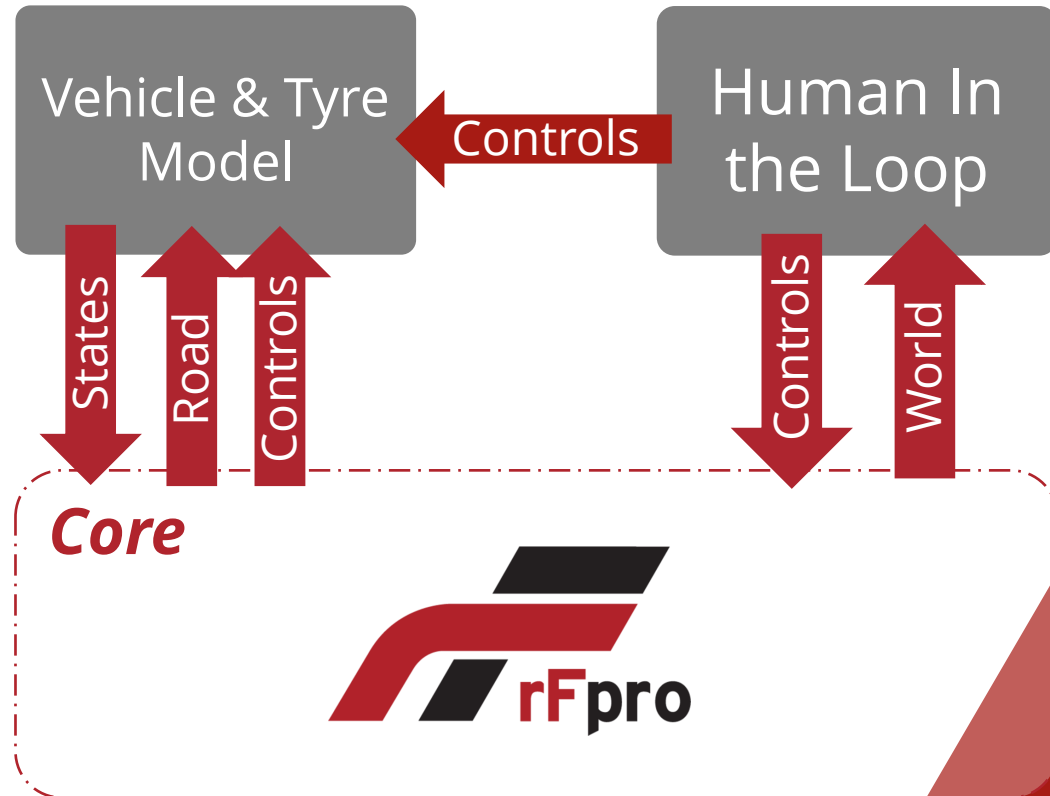
HD Surface



Video – cosin FTire in rFpro



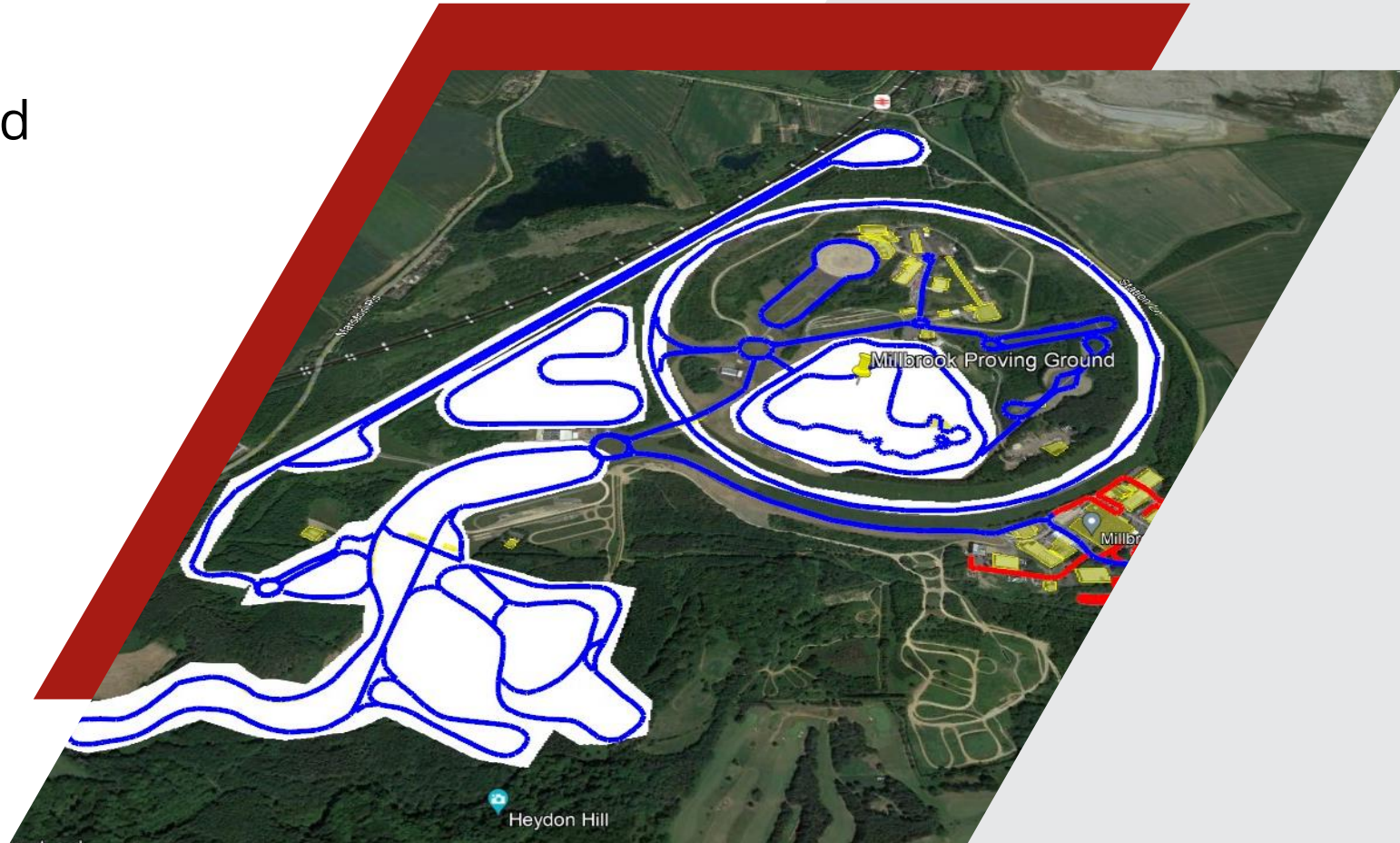
Human in the Loop



rFpro Content Production

Obtain a LiDAR scan:

- We define the routes that need scanning:
 - Ride Routes
 - Steering & Handling
 - Hills Routes
 - High Speed
 - Dirt Roads



rFpro Content Production

Survey grade LiDAR scans produce high density point clouds for real world locations

- Geo Referenced, spherical photography and video is captured
- rFpro process this data to produce:
 - a vehicle dynamics grade road surface and kerb detail – accurate to within 1mm in the vertical axis (z)
 - A graphical representation of the location using the reference material



rFpro Content Production

- **Accurate geometry** is achieved due to survey grade LiDAR scanned locations
- **Material properties** can be calibrated from a number of different methods
- **Render modes** allows sensor models to run in the correct world environment



rFpro

rFpro Content Production

Physically modelled means:

- Light sources in scene use real-world units (cd/m^2)
- Every surface has a reflection (specular)
- Reflection maps are light sources
- Energy conservation: A surface cannot reflect more light than it receives



Human in the Loop



Case Studies/ Customer Success



Continental - Customer Success

"Developing and testing premium tires is a highly complex, time-intensive process. By using the new dynamic driving simulator, we will make this development process even more efficient in the future",

Says Dr. Boris Mergell, Head of Research and Development of the Tires business area

- ✓ Savings by Conti
 - ✓ 10,000 test tires per year
 - ✓ 100,000 kilometres less on real roads
- ✓ simulate accelerations over a longer period of time
- ✓ Environmental, Social, and Governance - ESG
- ✓ Reduced reliance on real-world vehicle testing
- ✓ Improve market competitiveness

Michelin - Customer Success

“Our customers rely on virtual vehicle models to gain efficiency, improve performance and reduce cost during the vehicle development process”,
explains Rajat Aggarwal, Tire Performance Expert at Michelin

- ✓ Improve vehicle development process
 - ✓ Efficiency
 - ✓ Performance
 - ✓ Reduce cost & time
- ✓ Environmental, Social, and Governance - ESG
- ✓ Reduced reliance on real-world vehicle testing



MICHELIN

Nexen Tires - Customer Success

“We are committed to dedicating our R&D efforts to developing tires that are suitable for new concept vehicles in a timely manner. The product development process incorporating VR, AI, and other technologies aligns with our vision of opening a sustainable future with tomorrow's technology.”

- ✓ Reduce costs associated with
 - ✓ Raw materials
 - ✓ Vehicles and
 - ✓ Space rentals
 - ✓ Testing
 - ✓ Product development Cycle
- ✓ Environmental, Social, and Governance - ESG
- ✓ Reduced reliance on real-world vehicle testing
- ✓ Improve market competitiveness

Tire Models & rFpro's Terrain Server

cosin
scientific software

FTire



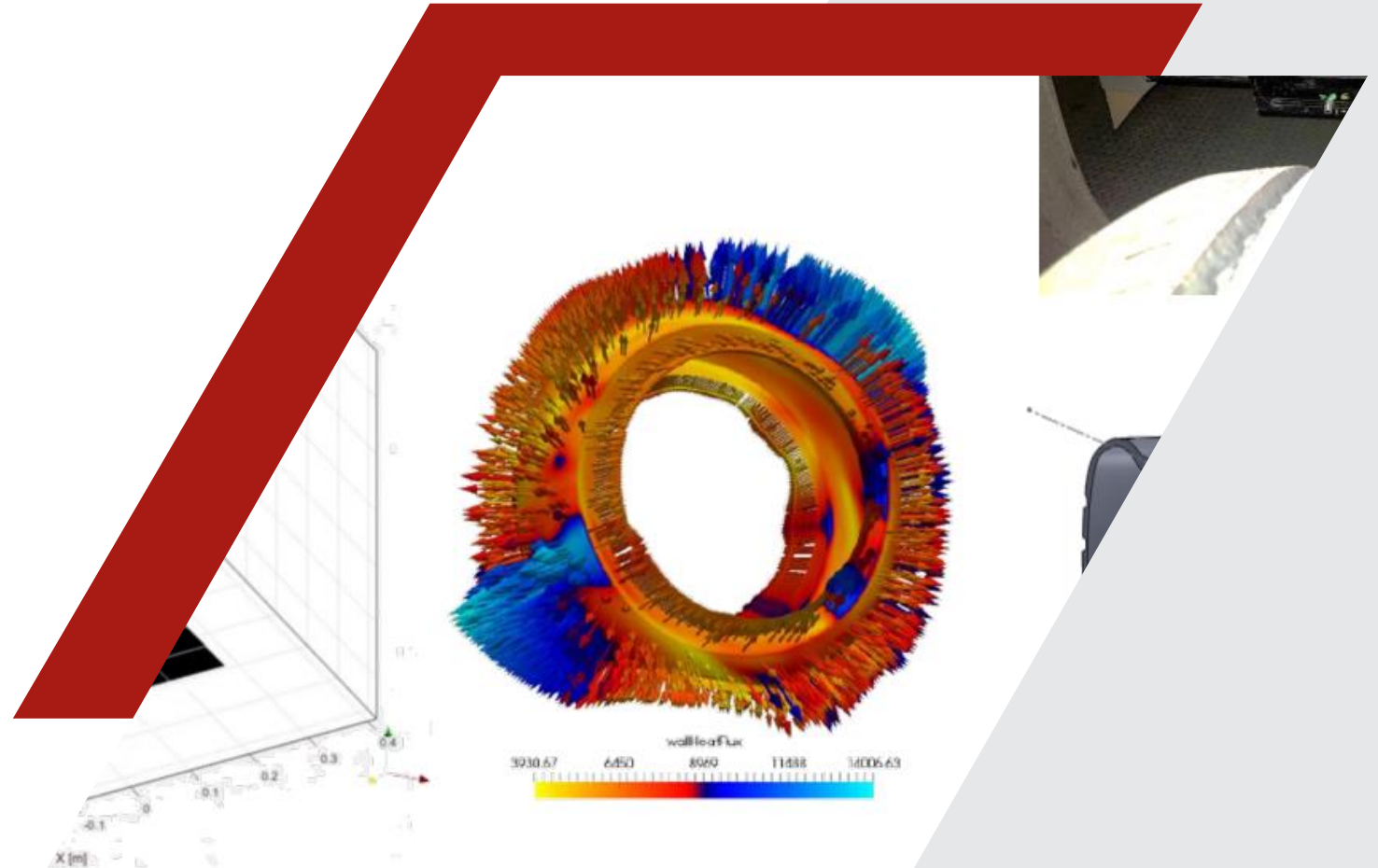
MEGARIDE
APPLIED VEHICLE RESEARCH

threedeeRide

SIEMENS

Ingenuity for life

MF-Swift



Summary

1

Products

From Desktop to Driving Simulator

2

Applications

Model validation, Compound testing and evaluation

3

Features

High Fidelity, Flexible and User Friendly

4

Benefits

Faster, Cost Effective, Safe and Scalable

Thank You



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Social Media

