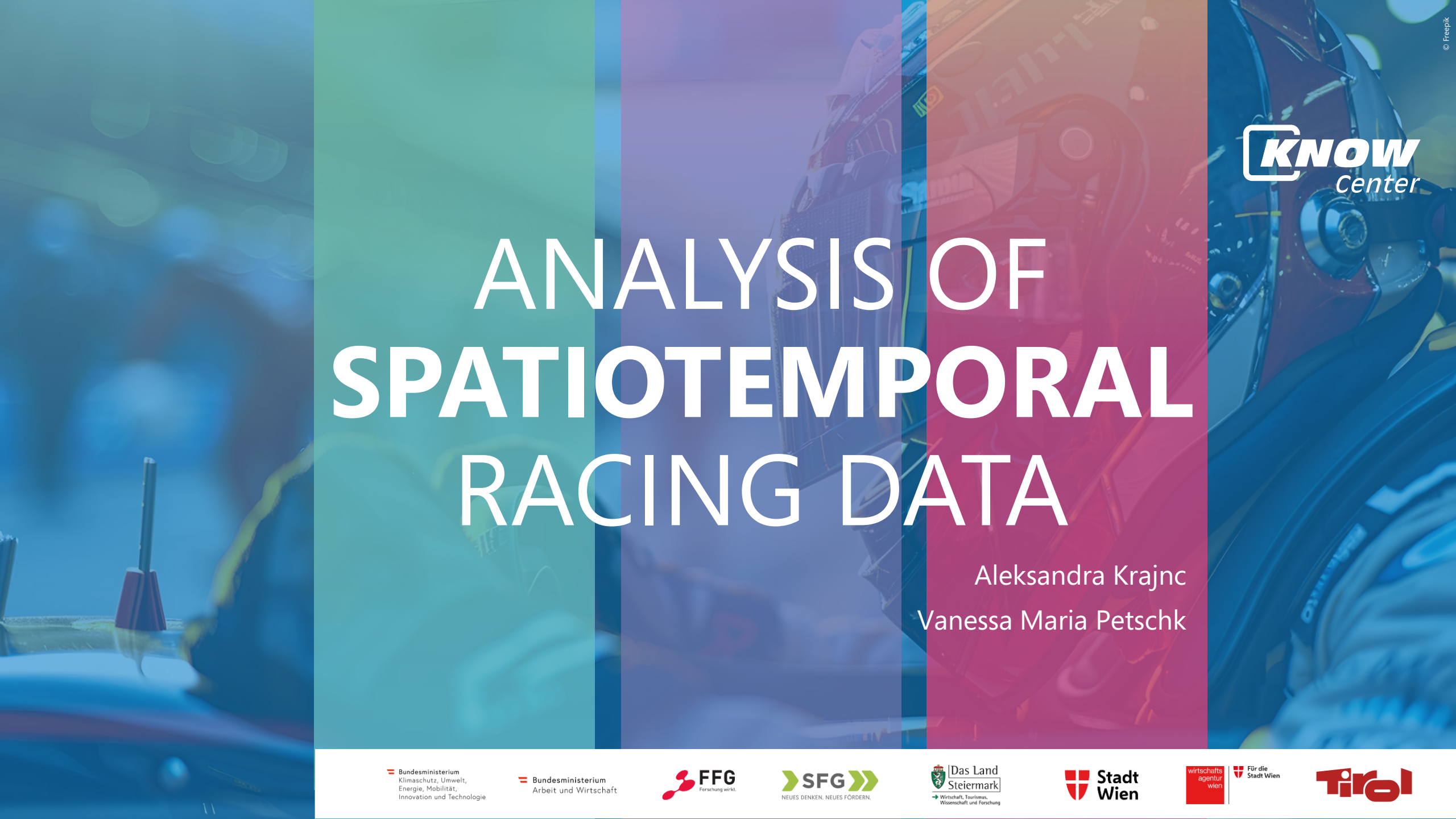


KNOW Center

ANALYSIS OF **SPATIOTEMPORAL** RACING DATA

Aleksandra Krajnc

Vanessa Maria Petschk

Bundesministerium Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie

Bundesministerium Arbeit und Wirtschaft

FFG Forschung wirkt.

SFG NEUES DENKEN. NEUES FÖRDERN.

Das Land Steiermark Wirtschaft, Tourismus, Wissenschaft und Forschung

Stadt Wien

wirtschaftsagentur wien

Für die Stadt Wien

Tirol

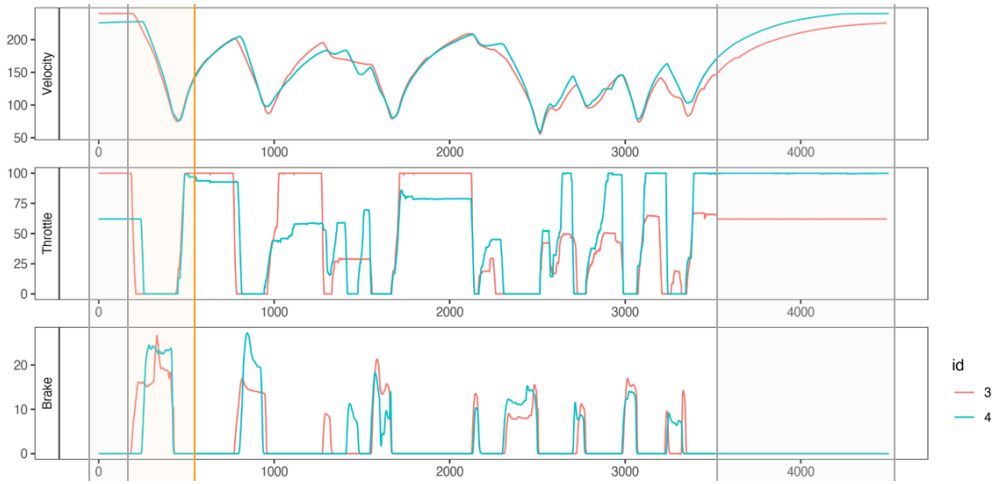
Problem:
different data for racing analyzation processes, conventional analyses consider the car of car but not the driver and his individual driving style, there is no one-fits-all solution available

Solution:
AI based analysis and evaluation of vehicle, road and driver for optimized planning, cooperation platform für engineers, coaches and drivers to achieve optimal results

Benefits and value:
individual AI-based racing data analysis including the important points (breaking point, apex, turn-in)

Industries:
Air Race, Formula1, Non-Speed-Events, Automotive industry

ANALYSIS OF **SPATIOTEMPORAL** RACING DATA



Analysis of Racing Data

Collection and analysis of data is industry standard

Vehicle

Driver

Road

Data analysed by experts

Individual Process: Consideration of car, but also driver

Individual driving style

One solution does not fit all

Human in the loop is needed

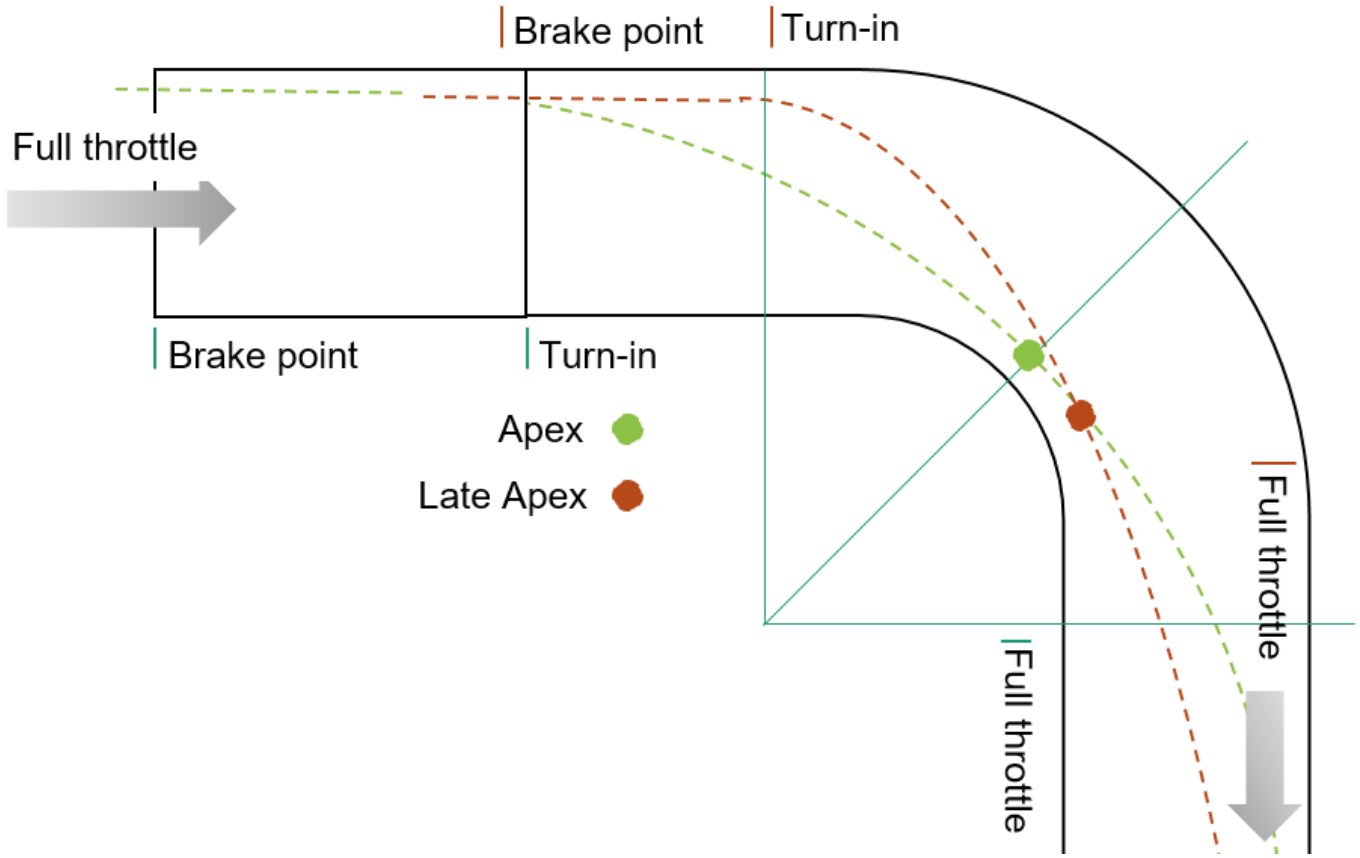
ANALYSIS OF **SPATIOTEMPORAL** RACING DATA

Analysis of Racing Data

Subtask: Cornering

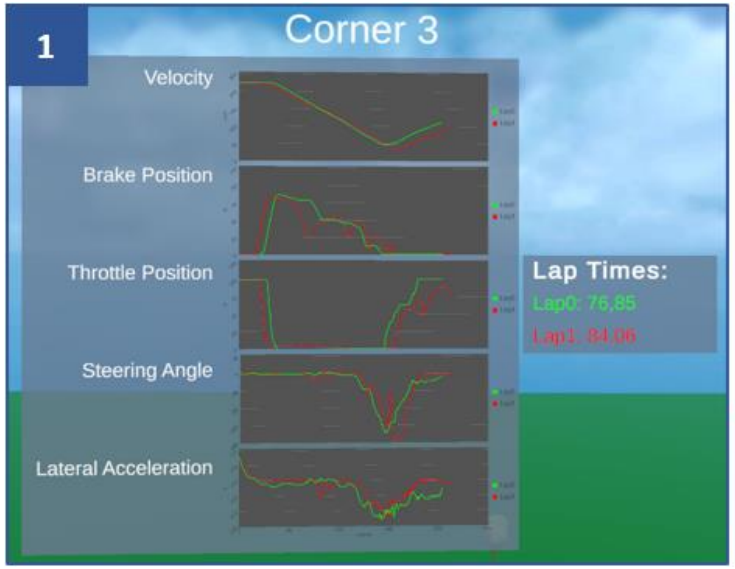
Important Points:
Braking Point, Apex, Exit

Individual Definitions

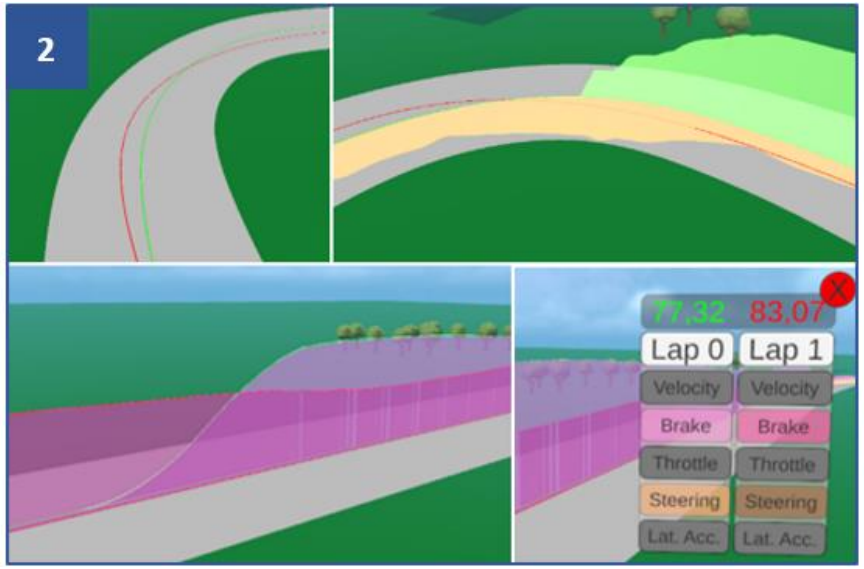


Visualization of Racing Data

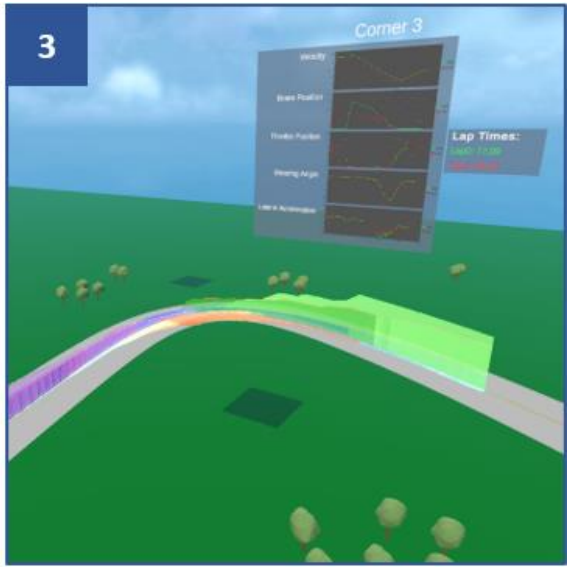
Abstract



Situated



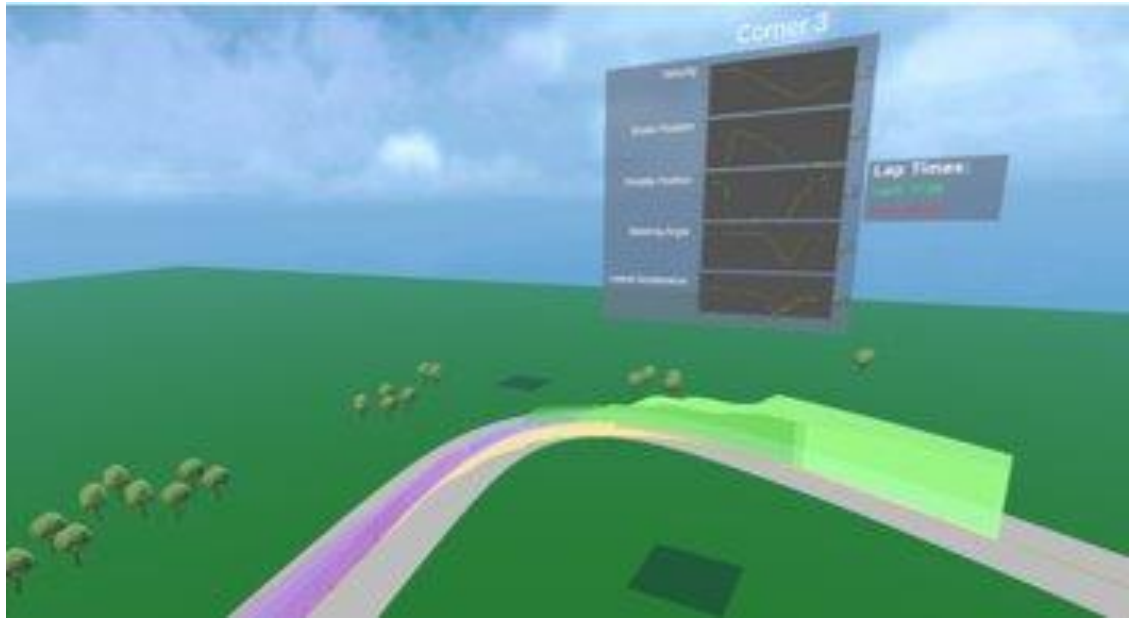
Hybrid



Study and Results

5 Experts: race engineers, researcher
3 Conditions: Abstract, Situated, Hybrid
Questions: Important points + important data

Favourite Condition: Hybrid
Situated prefered for details and exploring
Abstract prefered for overview and apex



Presented at SUI '23: The 2023 ACM Symposium on Spatial User Interaction, Sydney, NSW, Australia, October 2023
DOI: https://doi.org/10.1145/3607822.3614542

Future Work/Potential

Involve different stakeholders e.g. drivers (drivers mode)

Collaboration platform for racing engineer, coach and driver

Application to other domains: e.g. air race, non-speed events, industry

Know Center Research GmbH

Sandgasse 34/2
A-8010 Graz
+43 316 873 30801
info@know-center.at

ANALYSIS OF **SPATIOTEMPORAL** RACING DATA