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Automotive LLM Model

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PROBLEM

Massive amounts of telemetry data

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TIME CONSUMING & COMPLEX PROCESS

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SOLUTION

An AI solution for precise POST-SESSION ANALYSIS to enhance racing performance

A Large Language Model (LLM) that efficiently processes telemetry data for RAPID INSIGHTS

TIME-SAVING support for telemetrists with EFFICIENT data analysis

VALUE PROPOSITION

Our project aligns with SDG 9 – Industry, Innovation, and Infrastructure by using advanced AI technology to drive innovation and improve efficiency in the motorsport industry.

By providing actionable insights, we support SUSTAINABLE practices and help modernize both performance and infrastructure.

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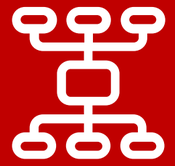
MODULES

ANOMALY DETECTION

SIMULATION & PREDICTION



TELEMETRY COMPARISON

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ANOMALY DETECTION

Uncover **HIDDEN ISSUES** identifying **UNUSUAL PATTERNS**

Timely intervention to **REDUCE COSTS**

Swift interventions that **SAFEGUARD PERFORMANCE** and **RELIABILITY** on the track

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SIMULATION & PREDICTION

Transforming raw data into PREDICTIVE INSIGHTS

Empowers teams to ANTICIPATE performance outcomes

Enabling preemptive strategies that MAXIMIZE race potential

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TELEMETRY COMPARISON

Discover **UNCOVERING PERFORMANCE** trends through telemetry comparisons

Enables **PRECISE** adjustments and **TARGETED IMPROVEMENTS**

Consistent advancements in both **DRIVER SKILL** and **CAR SETUP**

ADAPTABILITY

MOTORBIKE RACING

NASCAR RACING

RALLY RACING

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DESIGN

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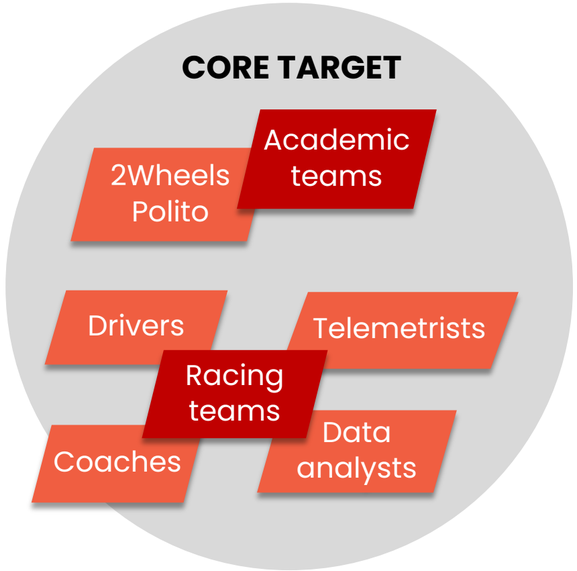
STAKEHOLDERS



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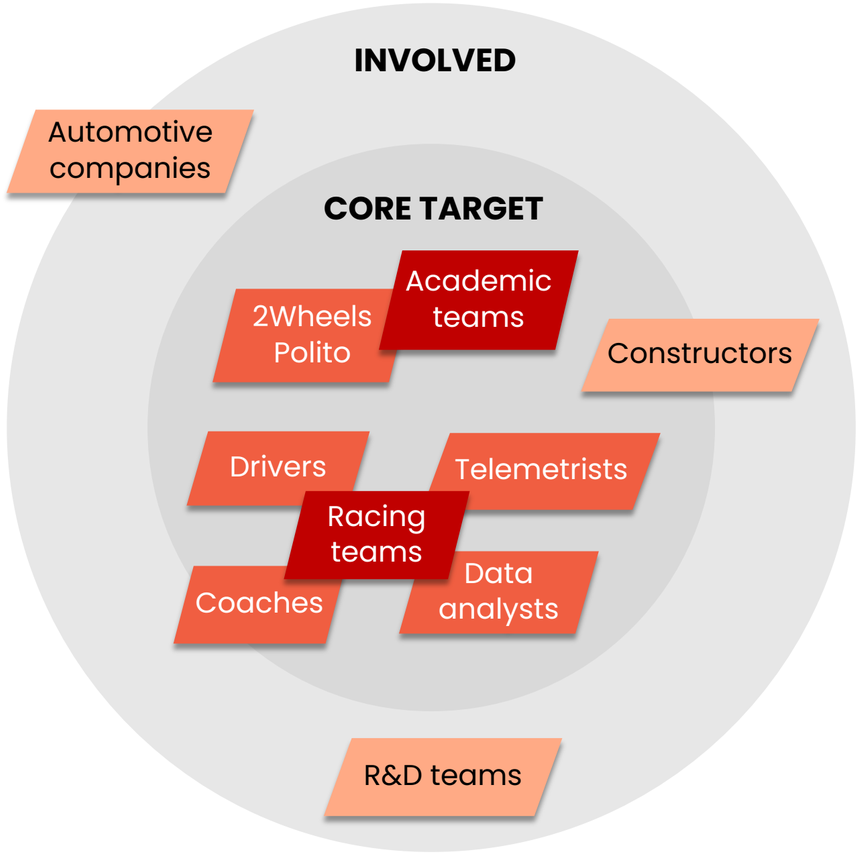
STAKEHOLDERS



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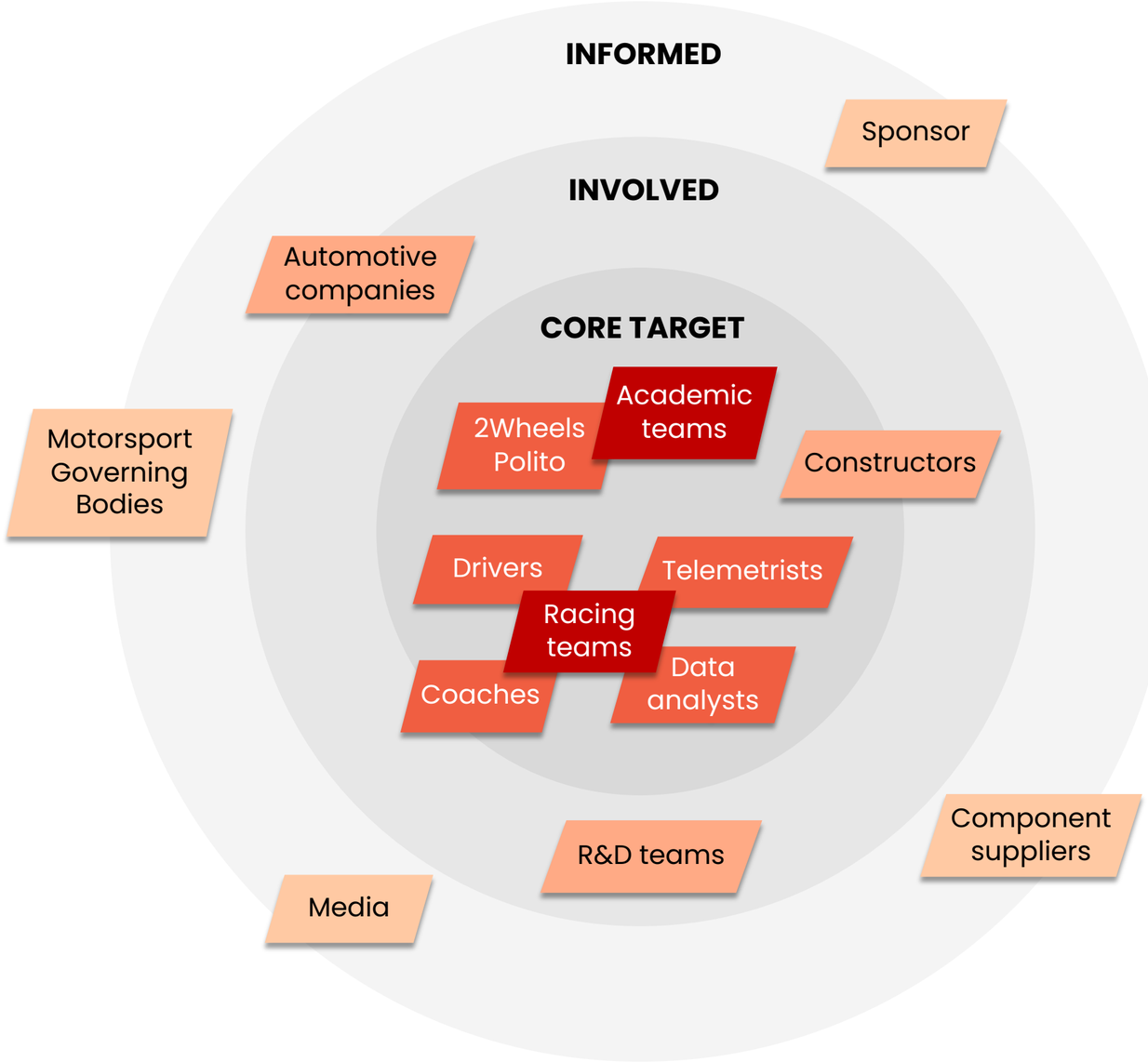

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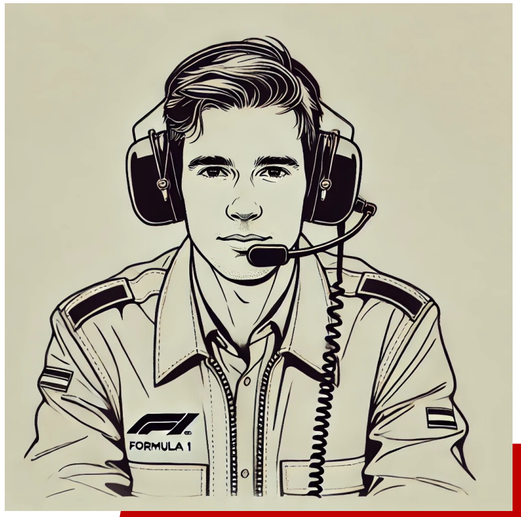
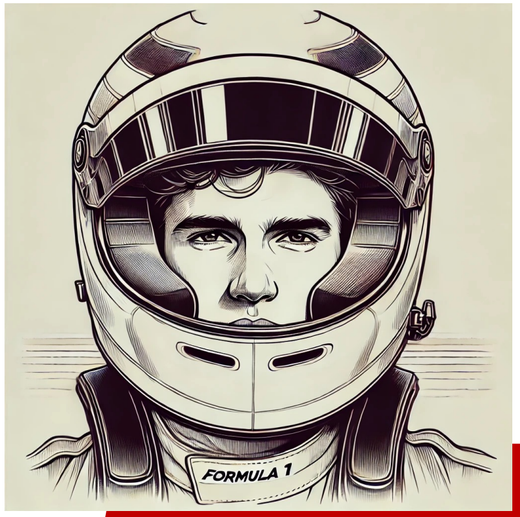
USER PERSONAS



Alex
TELEMETRIST

Overwhelmed by data volume, making real-time issue detection difficult.



Charles
DRIVER

Finds technical data hard to translate into improvements on the track

Giusy
COACH

Lacks actionable data directly supporting psychological and physical coaching

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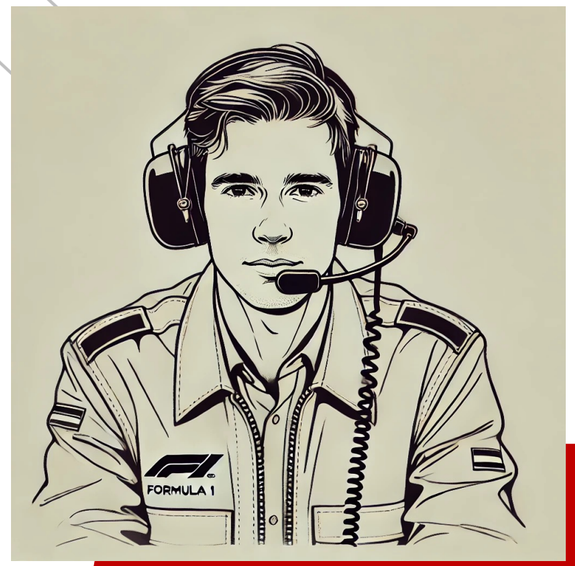
USER STORIES



Alex
TELEMETRIST

As a Telemetrist, **I want** a concise overview of key performance metrics for each session, **so that** I can quickly identify critical areas that may require adjustments.

As a Telemetrist, **I want** a report on the effectiveness of different setups used during the session, **so that** I can understand which configurations work best under specific conditions.

As a Telemetrist, **I want** to compare driver performance metrics across various laps or sessions, **so that** I can identify consistent strengths and areas for improvement.

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USER REQUIREMENTS

		FUNCTIONAL	NON-FUNCTIONAL
Mo	MUST HAVE	**MUST HAVE:** the system must **generate diagnostic reports and feedbacks** on the effectiveness of different car setups used during a session, identify setup issues and highlight configurations that yield optimal performance under specific track conditions.	**MUST HAVE:** the system must be **robust**, able to handle large volumes of telemetry data without performance degradation, ensuring accurate and reliable analysis results.
S	SHOULD HAVE	**SHOULD HAVE:** the system should **analyze and display** correlations between driver feedback and telemetry data insights, allowing coaches to validate drivers' perceptions and adjust coaching methods.	**SHOULD HAVE:** the system should have an **intuitive, user-friendly interface**, allowing seamless interaction with analysis tools and easy viewing of insights.
Co	COULD HAVE	**COULD HAVE:** The system could **include** customizable options to adjust analysis parameters to meet the specific needs of different teams.	**COULD HAVE:** the system could provide options for **customizable interface** themes (e.g., light/dark mode or adjustable layout) to enhance user experience and accessibility.
W	WON'T HAVE	**WON'T HAVE:** The system won't **provide predictive** race strategy recommendations based on real-time track and weather conditions, focusing instead on analysis and insights from completed sessions.	**WON'T HAVE:** the system won't be **designed as a mobile application**, limiting its interface to desktop or laptop environments for data analysis.

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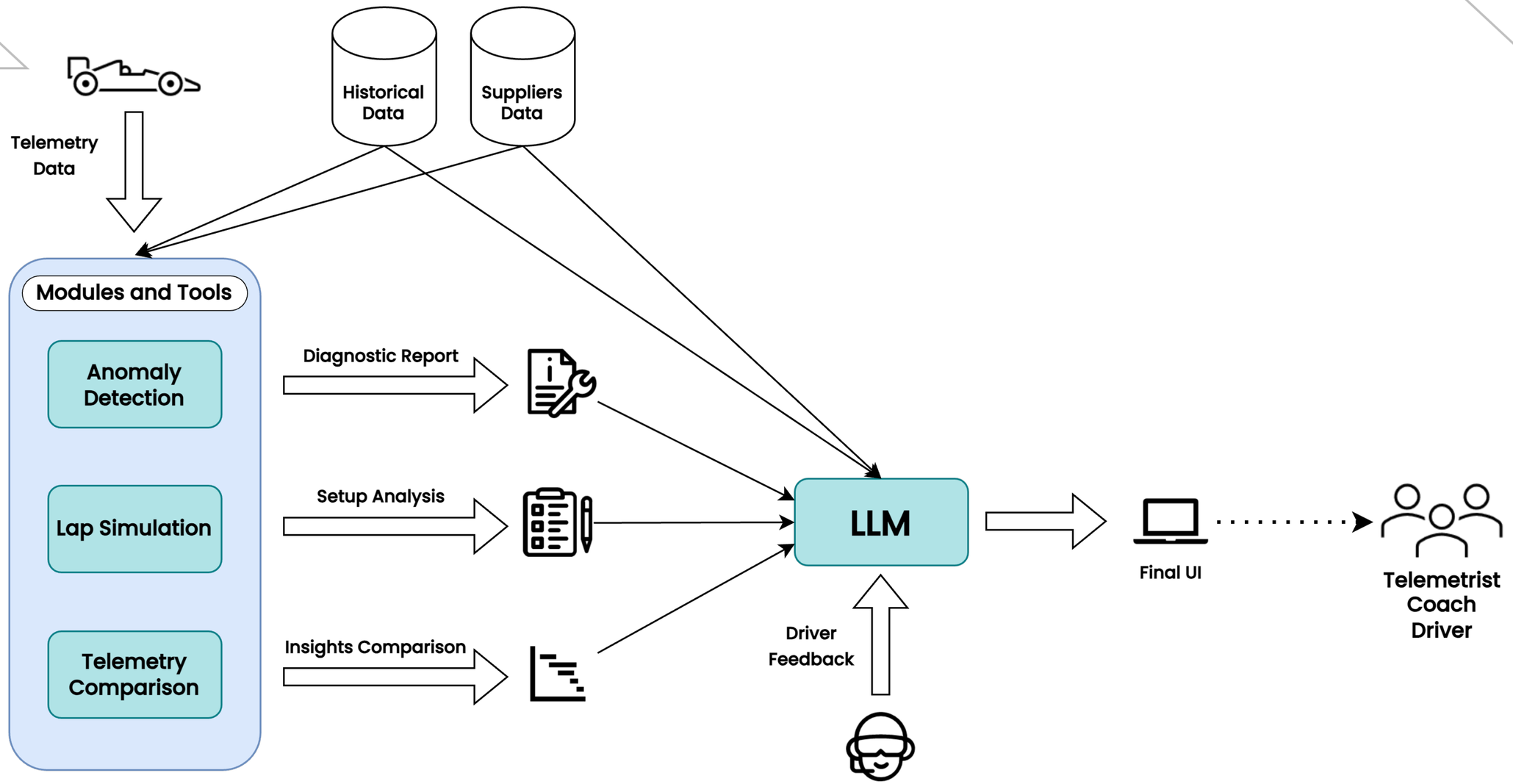
FUNCTIONAL DIAGRAM



VALUE PROPOSITION

PER PERSONA

FOR TELEMETRISTS
who need to identify the best setup and address mechanical anomalies
our system is an advanced telemetry analysis tool
that helps improving performance by spending less time manually analyzing data

FOR DRIVERS
who want to optimize performance by understanding their strengths and areas for growth
our system is a detailed performance reporting tool
that enables lap-by-lap comparisons, highlights strengths, and provides actionable insights on specific areas for improvement

FOR COACHES
who aim to align driver feedback with objective data for tailored training
our system is a comprehensive performance analysis tool
that correlates telemetry data with driver feedback, validates drivers' perceptions and improve training sessions

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MANAGE

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WBS

WP No	WP Title	Lead Name	PM	Start Month	End Month
1	Current State Analysis and Project Design	D. Benotto	0.3	1	1
2	Data Collection, Preparation, and Study	M. Mustari	0.3	1	1
3	Development of AI Modules and Tools	P. Riotino	1	1	2
4	Integration of LLM and User Interface	M. Mustari	1	2	3
5	Testing, Validation, and Optimization	D. Benotto	1	3	3
6	Communication: Documentation and Final Presentation	P. Riotino	0.3	3	3
	Total		**4**		

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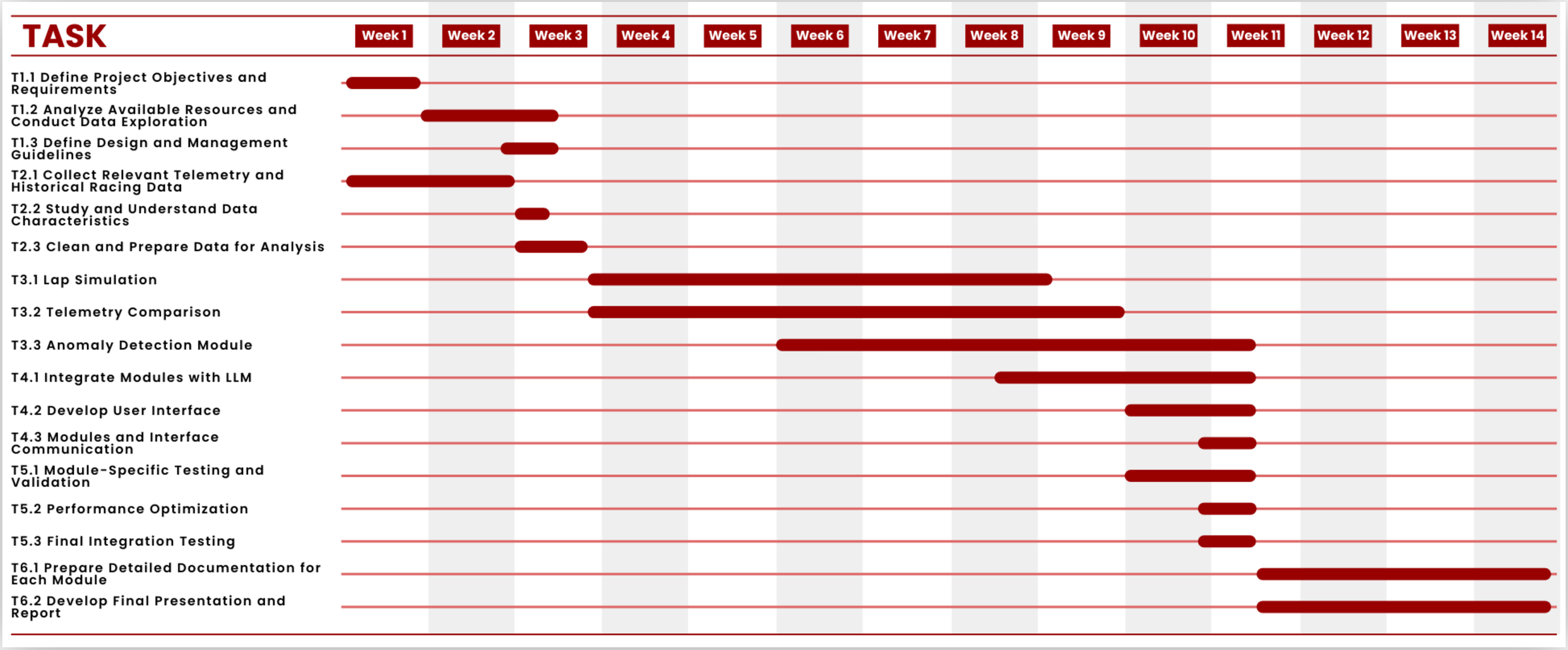
TASK
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Week 13
Week 14
T1.1 Define Project Objectives and Requirements
T1.2 Analyze Available Resources and Conduct Data Exploration
T1.3 Define Design and Management Guidelines
T2.1 Collect Relevant Telemetry and Historical Racing Data
T2.2 Study and Understand Data Characteristics
T2.3 Clean and Prepare Data for Analysis
T3.1 Lap Simulation
T3.2 Telemetry Comparison
T3.3 Anomaly Detection Module
T4.1 Integrate Modules with LLM
T4.2 Develop User Interface
T4.3 Modules and Interface Communication
T5.1 Module-Specific Testing and Validation
T5.2 Performance Optimization
T5.3 Final Integration Testing
T6.1 Prepare Detailed Documentation for Each Module
T6.2 Develop Final Presentation and Report

THANK YOU

FOR YOUR ATTENTION

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