

SafeFlow System

AI-Driven Safety Workflow Optimization



Amel Jelidi¹, Kajmakovic Amer¹, Robert Egger², Franz Sentobe², Palmisano, Alexander², Kay Römer³, Georg Macher³

Pro2Future GmbH¹, Siemens AG Österreich², TUG-ITI³

¹ Sandgasse 34, 8010 Graz

² Straßganger Str. 315, 8054 Graz, Austria

³ Inffeldgasse 16/1, 8010 Graz



MOTIVATION & GOALS

Safety workflow processes are often **complex, repetitive, and tedious**, requiring strict adherence to **predefined standards** and structures. This makes the work monotonous, error-prone, and disengaging for safety engineers. To address these challenges, we aim to leverage **Large Language Models (LLMs)** to simplify processes and support safety engineers.

By accelerating safety-related tasks, LLMs will **enhance efficiency, reduce time to market, and lower costs**. Their knowledge-driven support improves decision-making, reduces mistakes, and optimizes performance by making safety processes more flexible, reliable, and scalable.

Project FactBox

Project Name SafeFlow
Project ID MFP II Prod.2
Duration 48 Months

Area 4.1
Cognitive Products

Project Lead
DI Dr. Amer Kajmaković

APPROACH

Norm-centric Agent:

- Official functional safety certification exam passing with 70% correctness

HARA Agent:

- Answering HARA-related questions with over 80% of accuracy

Orchestrator Agent:

- Controls the overall process and delegates tasks to relevant agents

CONTRIBUTION

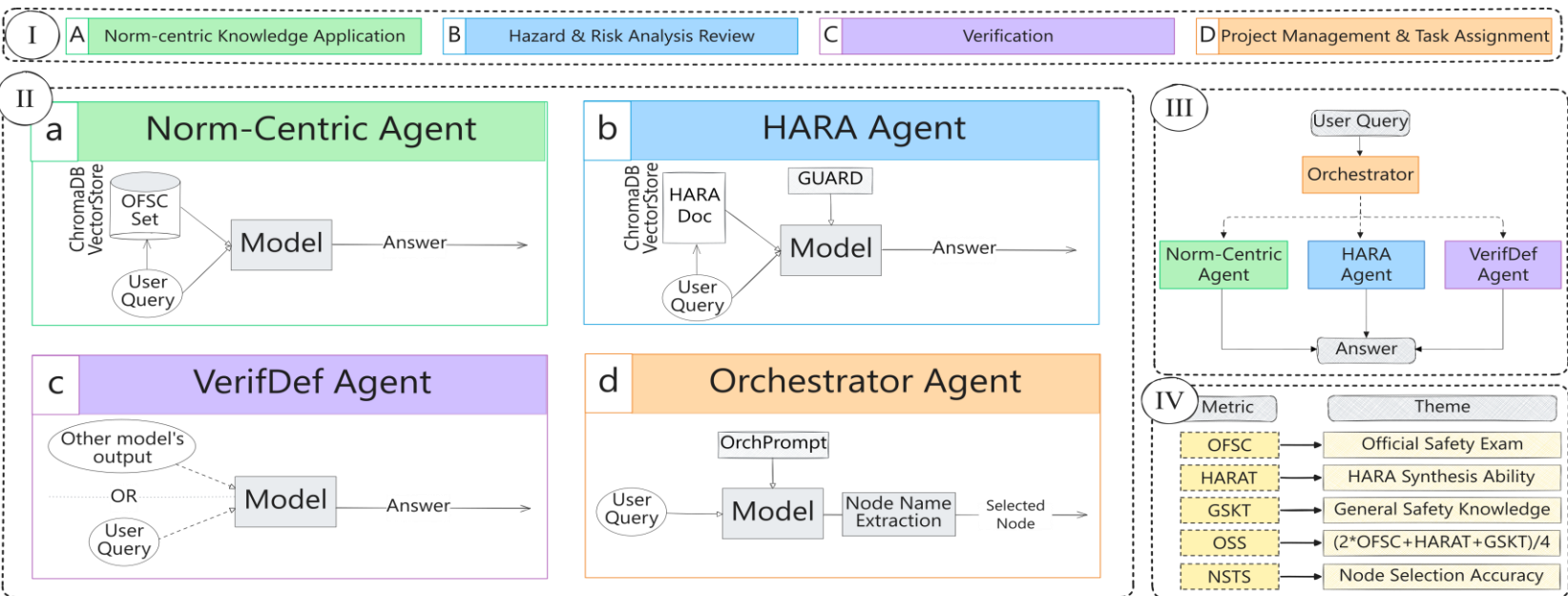
Scientific contribution

Development of a Hand-Crafted Functional Safety Dataset.
Agentic System Architecture Aligned with the V-Model for safety.
Custom Evaluation Metrics for Digital Safety Assistants.
Integration of Diverse Data and Multi-LLM Systems.

Economic contribution

Support for in Automated Safety Task Execution.
Certification-Level Performance – reducing time and resources.
Support with hazard and risk analysis verification and validation.
Reduction in Safety Documentation Overhead.

SYSTEM ARCHITECTURE



Contact: DI Dr. Amer Kajmaković, Pro2Future GmbH, amer.kajmakovic@pro2future.at, +43 316 873 - 9155

Acknowledgement: This work was supported by Pro2Future II (FFG, 911655) and SIEMENS AG.

SIEMENS