

H2OF: Human and Organisational Factors as the Source of Safety. The SEW Method as a Lever for the New CSM ASLP Implementation

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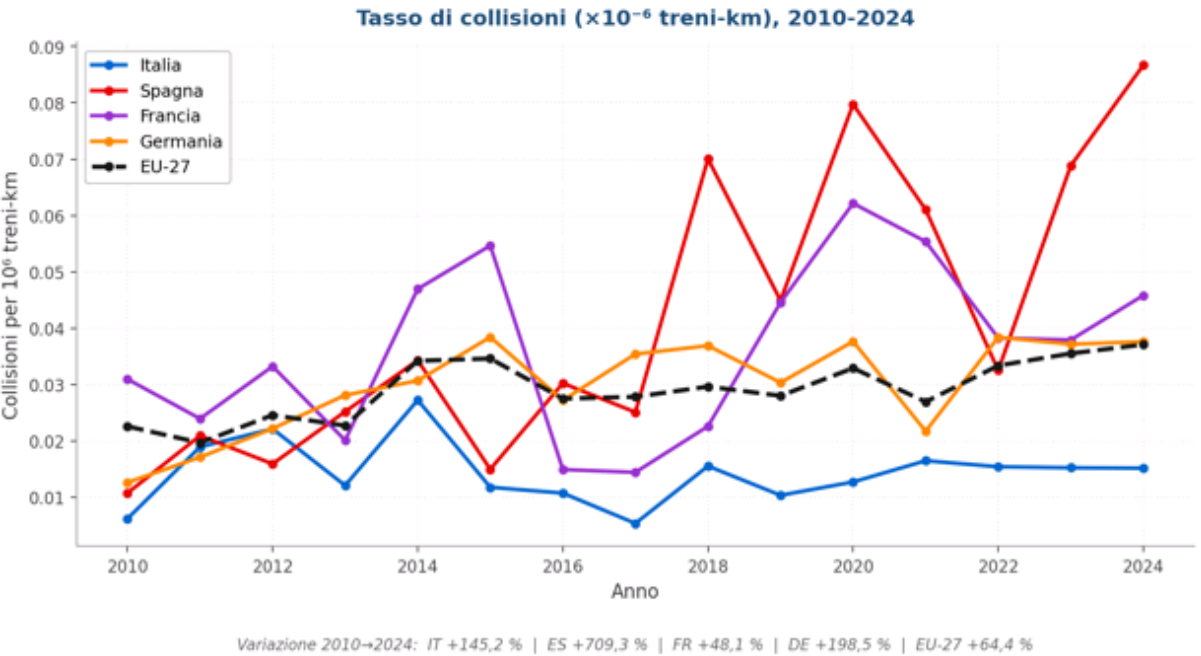
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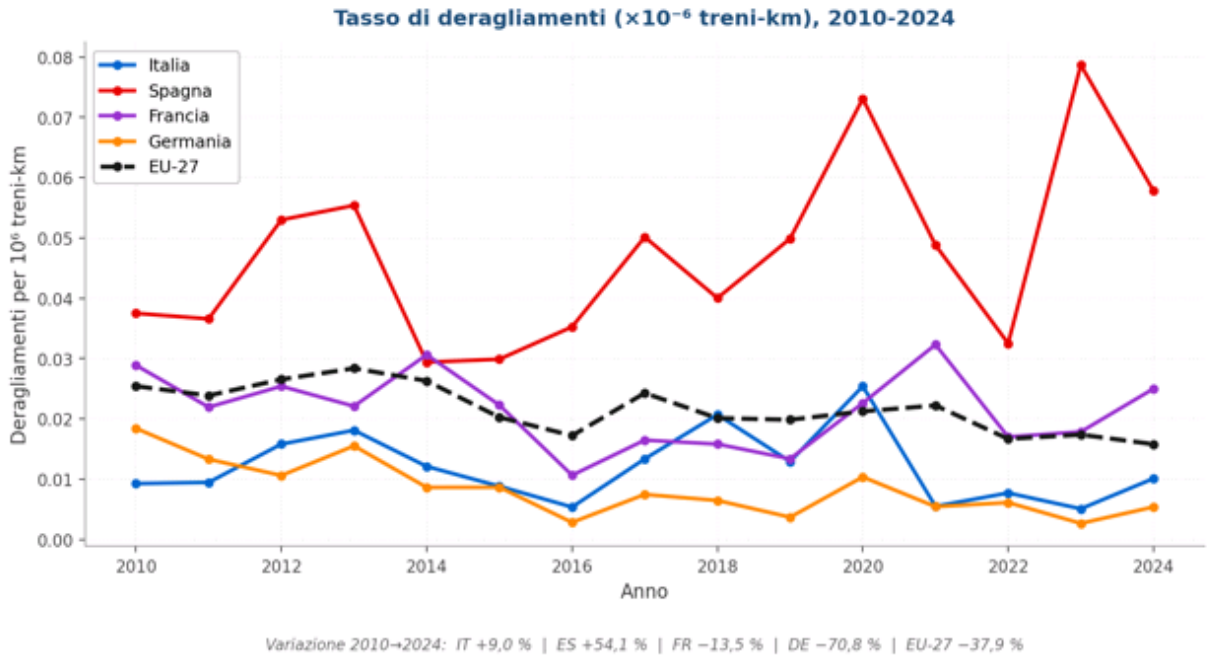
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OBJECTIVES

THE CONTEXT….





Source: Elaboration by Eng. G.Rossi

Techinal reliability is high…but there is a limit…only the technology «doesn't explain» the safety

…THEN THE CHALLENGE….

The railway system presents vulnerabilities at the interfaces between people, procedures and organizational context...

Safety performance is not only technology - it is continuously generated by the dynamics between Human and organizational Factors

...IN CONCLUSION



SEW Sharing Enterprise Well-beeing

SEW operationalises HOF dynamics: diagnose → integrate with technical risk analysis → co-design interventions → monitor learning and development – (PDCA).

In 2024, the methodology received "Safety Passport Training" certification from the ERA.

THE “SEW” METHOD

What SEW analyses beneath formal procedures



SEW METHOD -FOUR PHASES: FROM DIAGNOSIS TO ACTION

«HOT» PHASE

Decoding HOF dynamics: using quantitative tools (QE_HFRr questionnaire, EmotRail-FIT index) and qualitative methods (focus groups and demand analysis), we assess how HOF dynamics shape organizational behaviors regarding safety and production.

«COLD» PHASE

Integration with technical analysis: SEW integrates the interpretation of HOF dynamics with engineering-based risk management analysis

Area of intervention and monitoring: concrete actions include integrated training, participatory design of procedures, and introduction of HOF macro-indicators into the monitoring system. To implement these actions, SEW supports the interfaces between various organizational components and fosters continuous improvement (PDCA).

Defining development procedures: in collaboration with management and staff, strategies are defined to manage the complexities identified during the organizational analysis

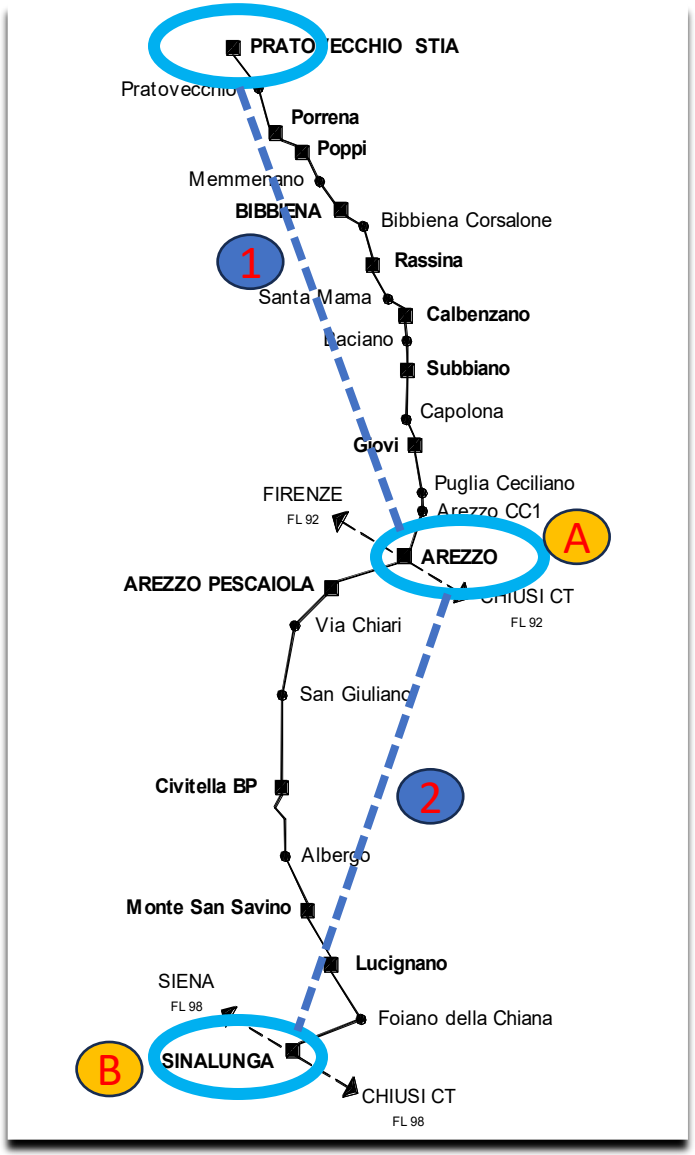
APPLICATION TEST

TFT

TRASPORTO FERROVIARIO TOSCANO S.P.A.

TRASPORTO FERROVIARIO TOSCANO (TFT)
INFRASTRUCTURE and PRODUCTION: WHERE – WHAT - DIMENSION





Two lines (IM LFI):

1. Arezzo-Stia (44 km)
2. Arezzo-Sinalunga (40 km)

Two connections to RFI (national IM):

A. Arezzo
B. Sinalunga

Other details:

- 12 stations
- 11 trains stop
- 25 level crossing

Production (2025):

- 707,000 train*km (pax)
- 1,100,000 pax
- 34,000 train*km (goods)
- 13 mln train*km (goods)

TRASPORTO FERROVIARIO TOSCANO (TFT)
PEOPLE

How many workers
96 employee
83,33% men
16,67% women

Average age: 44,70
11% Degree
80% High School

Accompanyng trains - Train drivers
69% of total workers
10% women

Turn over
5,02% vs 12% (national average)

SEW RESULTS 2021-2026: QUESTIONNARIE QE_HFRe

For each Analysis Area the Cultural Repertoires are described with particular attention to their impact on safety. These are the sets of shared representations that, through their interaction, shape the interpretation of professional identity and influence the implementation of productivity and coexistence processes within TFT's specific organizational context.

Perceived Safety	**SG - General Safety** The perceived level of effectiveness of the safety approach adopted by the organization
	SS - Sector Safety Assesses the perception of those aspects of the specific operational environment that should ensure the safety and well-being of personnel in their workplace.
Organizational Reliability with Respect to Safety Area	**FO (Training Reliability)** Perception of the operational validity of safety training [the reliability of what has been delivered (training) compared with what has been presented as useful and necessary]
	AO (Acceptance of Organizational Approach) Level of acceptance and sharing of the company's approach to safety
Relationship with the Organization	**VP (Professional Value)** Representation of one's own professional competence.
	VO (Organizational Value) The organization's ability to reduce internal conflicts. A high level of conflict increases the risk of human error.



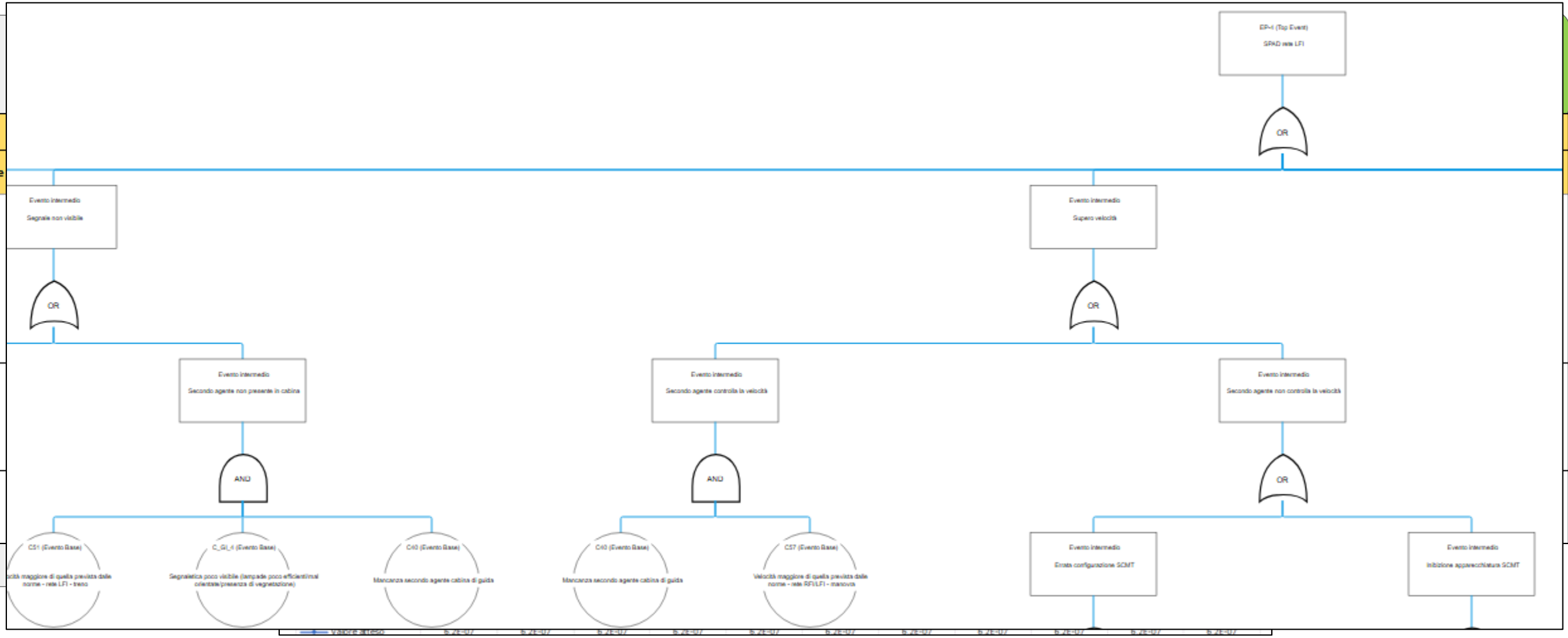
SAFEY CULTURE LEVEL [(8-13); (14-18); (19-24); (25-27); (28-32)] (1->5)

SEW RESULTS 2021-2026: QUESTIONNARIE QE_HFRr

		2021	2026
Perceived Safety	**SG - General Safety**	**26**	**25**
	SS - Sector Safety	**23.9**	**24**
Organizational Reliability with Respect to Safety Area	**FO (Training Reliability)**	**25.6**	**25**
	AO (Acceptance of Organizational Approach)	**23**	**24**
Relationship with the Organization	**VP (Professional Value)**	**23.8**	**23**
	VO (Organizational Value)	**22.7**	**22**
	SAFEY CULTURE LEVEL (1->5)	**19.72**	**23.6**

+ 12,5%

WHAT HAS BEEN DONE IN TFT FROM 2021



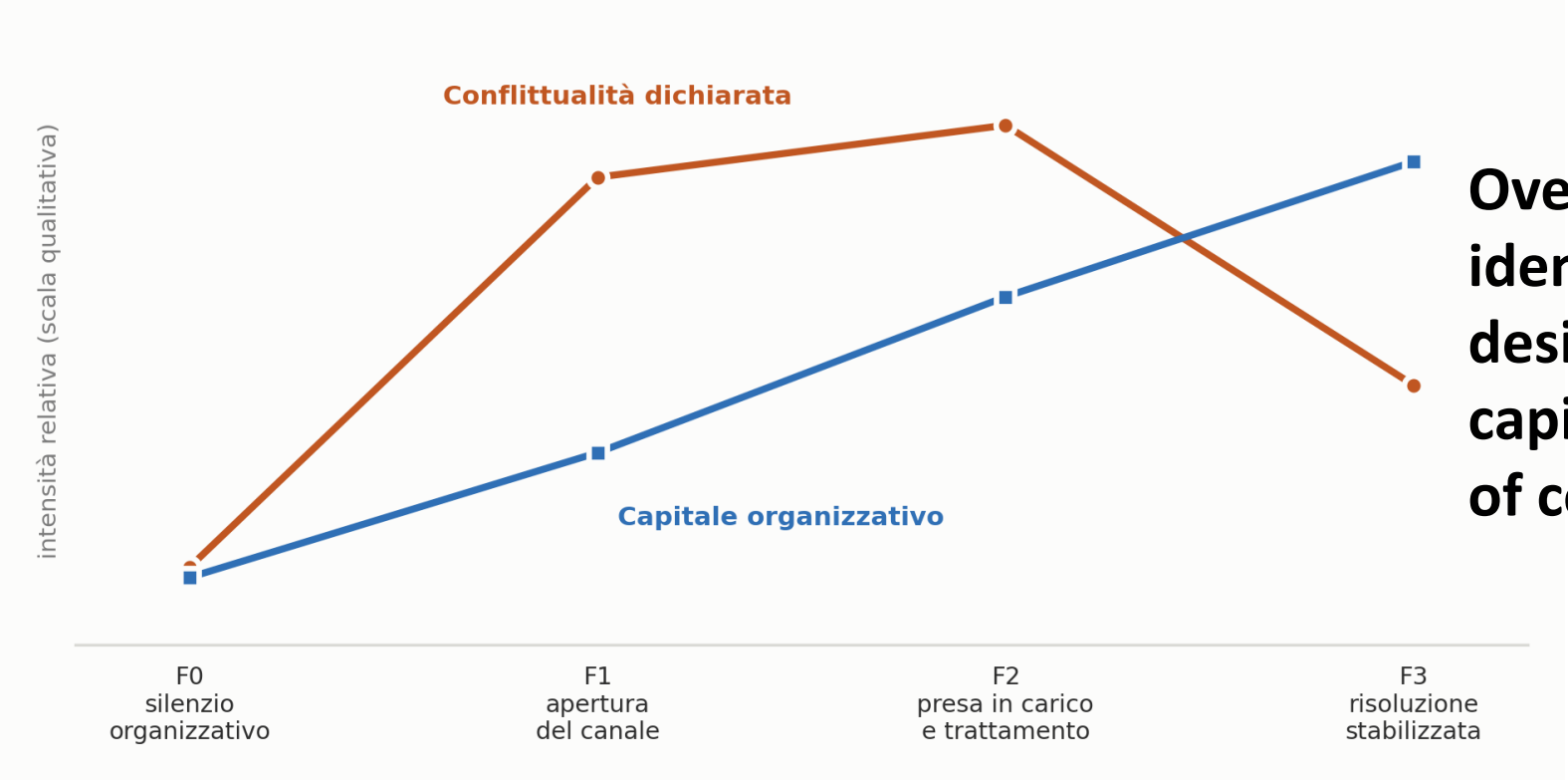
Review and update of procedures

Introducing 5*5 method

….TWO HOF DEVELOP LINES FROM THE ANALYSIS CARRIED OUT IN 2026

1: Quantitative data confirm the presence of valuable human capital. 56.1% of participants demonstrate "high integration," a percentage significantly higher than that observed in the national railway sector sample. Even more significant is the data regarding commitment to safety: 73.1% of participants fall into the favorable or very favorable assessment category

2: Safety culture develops in silos and is influenced by the interactions between HOF. Focus groups reveal a "blame culture" that discourages the reporting of critical issues. Understanding these dynamics makes it possible to address them.



Over the next 12 months, we have identified a set of initiatives designed to enhance organizational capital and reduce declared levels of conflict.

CONCLUSIONS

Focus on Knowledge of HOF Dynamics

The SEW methodology emphasizes the human element, explaining how and why even the best-designed project can fail if it does not take into account the people responsible for implementing it.

The TFT case study serves as a concrete example of this principle. Despite a high level of expertise and an improved safety culture (+12.5%), organizational vulnerabilities and a form of "emotional detachment" observed in certain groups pose a risk of erosion.

Integrating technical knowledge with expertise in HOF dynamics means shifting from a compliance-based mindset to one of collective safety competence.

It means recognizing that safety is an ongoing manifestation of organizational life, requiring management through tools grounded in a theory of competent practice.

The SEW methodology offers an operational bridge for railway companies seeking to turn the challenge posed by the new CSM ASLP regulation into an opportunity for sustainable development.