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iSteel-Expert: a solution to improve situation awareness in the EAF area which enforces process efficiency, reliability and sustainability while favoring preservation and transfer of steelworks know-how.

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Threats

- **Situation awareness** is a key to ensure process reliability, health and safety at the workplace and low environmental impact.
- The **haemorrhage of highly skilled people** in a sort of 'war of talents' is a serious business threat, which can be faced by creating attractive workplaces and stimulating working conditions;
- The steel industry workforce is undergoing an **unprecedented change**: more than 30% of the workforce is leaving the sector in the period 2015-2030, with a relevant loss of expertise, hard to timely re-form using traditional means and strategies.

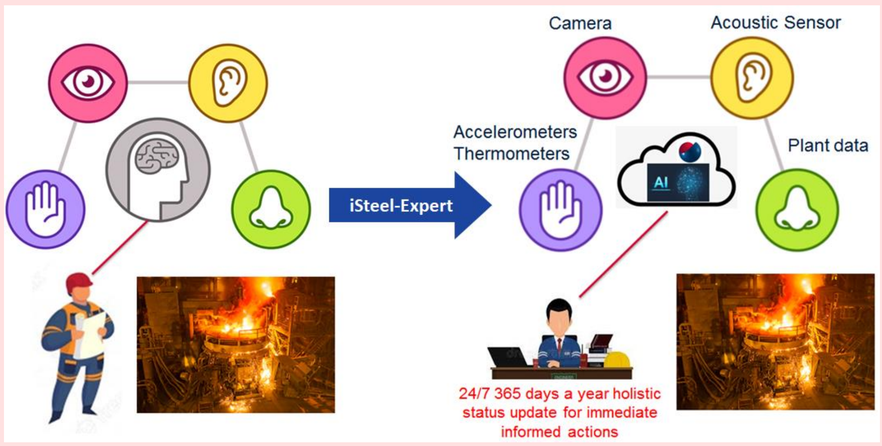
Opportunities

- **Novel sensing devices** are now available also suitable to the harsh environmental conditions commonly found in the EAF area
- **Artificial Intelligence and Machine Learning** enable processing and interpretation of large volumes of heterogeneous data.
- **New generations** are familiar with training and learning solutions based on simulation tools.

Challenge

iSteel-Expert implements and demonstrates in industrial environment a **remote expert virtual system** that monitors 24/7 the progress of the process, analyses the information and suggests actions to improve and/or correct steelmaking operations.

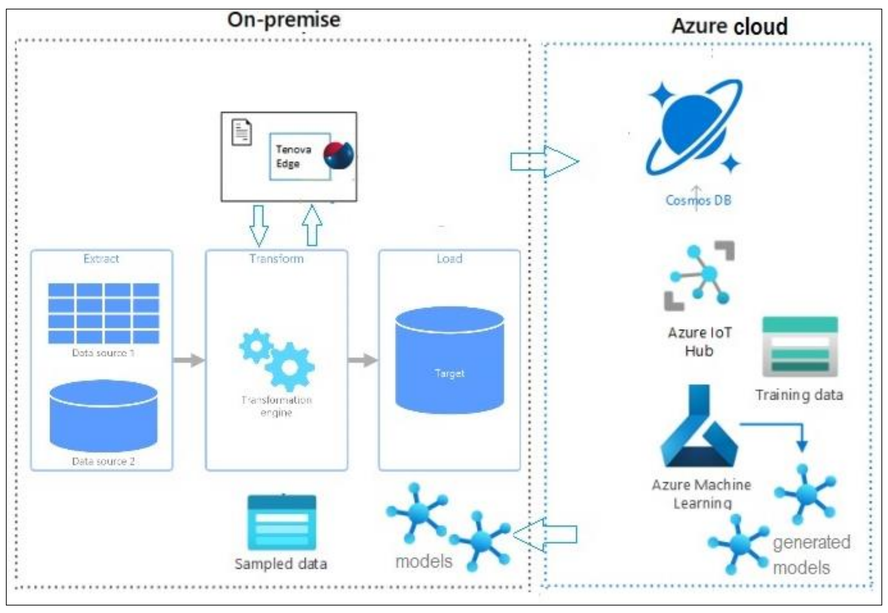
iSteel-Expert acts as a human expert in **collecting and analyzing information** from the furnace, **substantially increases its quality** to support operators in maintenance and decision-making.
Based on IoT, it enhances human management capabilities, **timely detects relevant events and identifies their consequences**.
A knowledge-based approach is integrated in an **interactive immersive training tool,** which favors preservation, transfer and continuous evolution of the company's wealth of knowledge

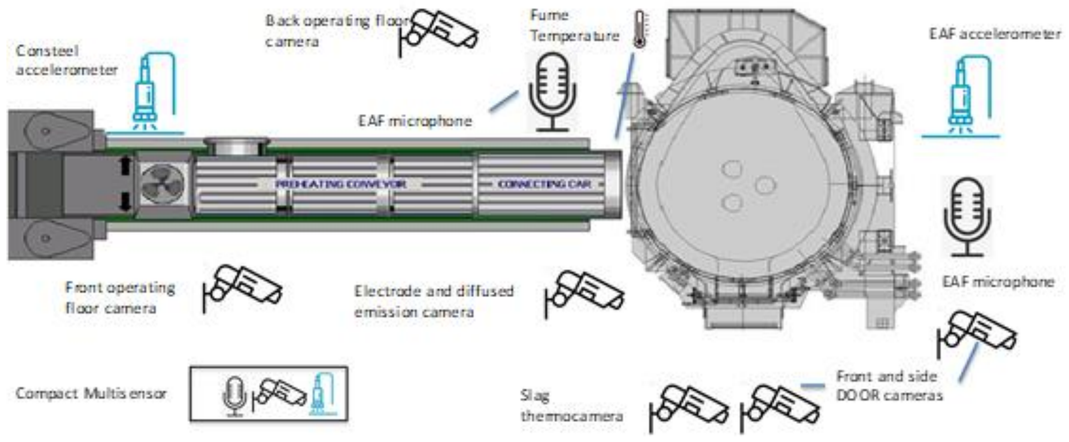


Our approach

iSteelExpert is the first demonstration project combining up-to-date key technologies, already demonstrated at industrially relevant environment, and tools, already built upon the Industry 4.0, to **extend the sensing capabilities of human operators** and **preserve company's know-how**.
Our methodology is based on five fundamental pillars:

- **Ad-hoc installation** of commercial **sensors** suitable to the harsh steelmaking environment.
- **Dedicated data collector electronic board** to simultaneously collect plant data in different formats and types
- **local preprocessing station** for video, acoustic, vibrational and temperature data, to extract relevant features and to transfer only necessary data to a cloud infrastructure.
- **Cloud infrastructure** running sophisticated **algorithms** (including **Machine Learning**) to provide useful Key Performance Indicators and smart information via user friendly and effective dashboards on a dedicated WEB portal.
- **Interactive immersive simulation training tool** using raw and processed data and exploiting innovative approaches.





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