



FORUMECCATRONICA



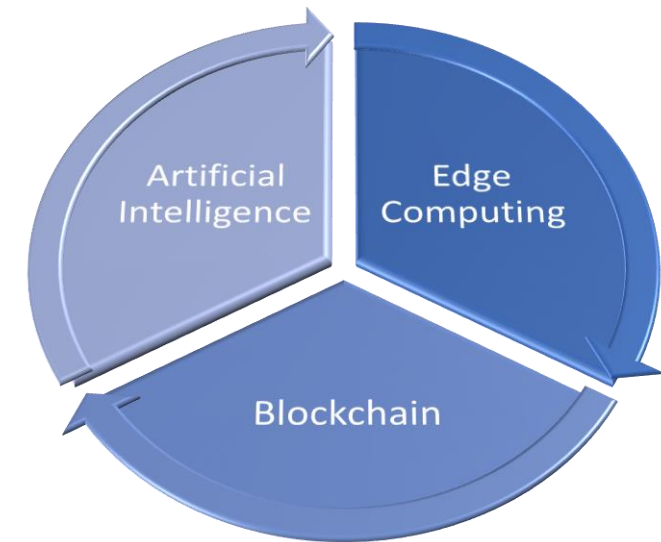
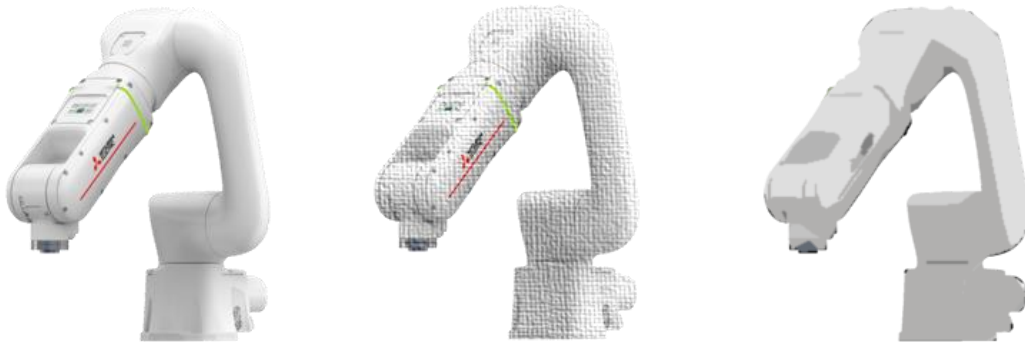
Le nuove frontiere dell'edge computing e
dell'intelligenza artificiale applicate ai robot

Mitsubishi Electric Europe

Simone Farruggio

Product Specialist Engineer - Robot

Robot As Intelligent Services Ecosystem



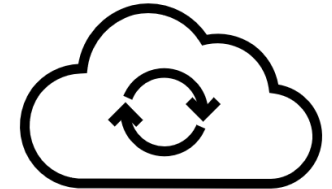
Architettura di sistema

Robot e sensori

Edge Computing

Cloud Computing – Modello IA

Sistema SCADA



Standard OPC UA

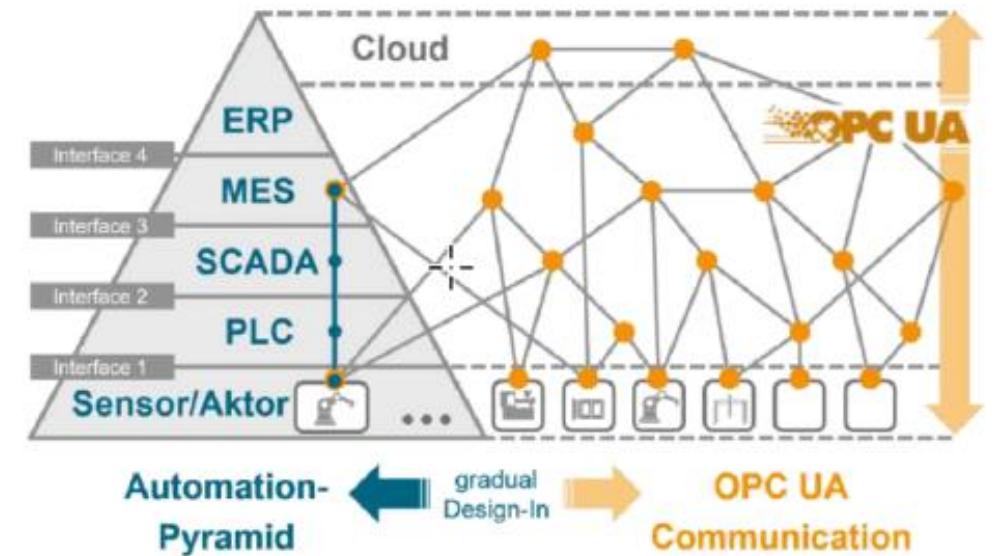
Modelli standardizzati da apparecchiature industriali

Gestione della sicurezza: token, crittografia

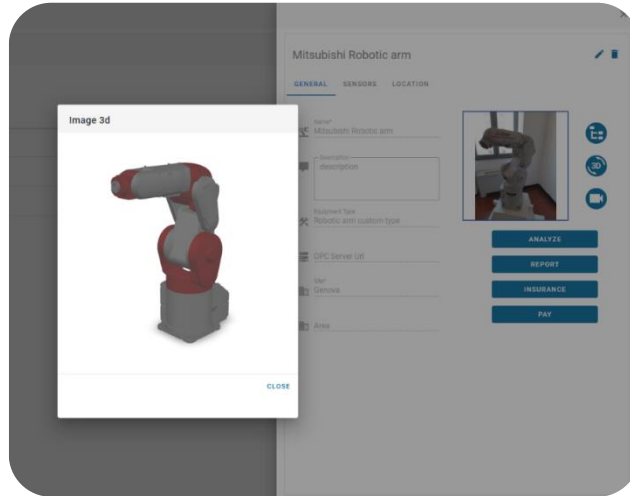
Semplice condivisione dati con livelli
SCADA, MES ed ERP

Timestamp

Apertura a differenti protocolli:
TCP/IP, UDP/IP, WebSocket, AMQP e MQTT

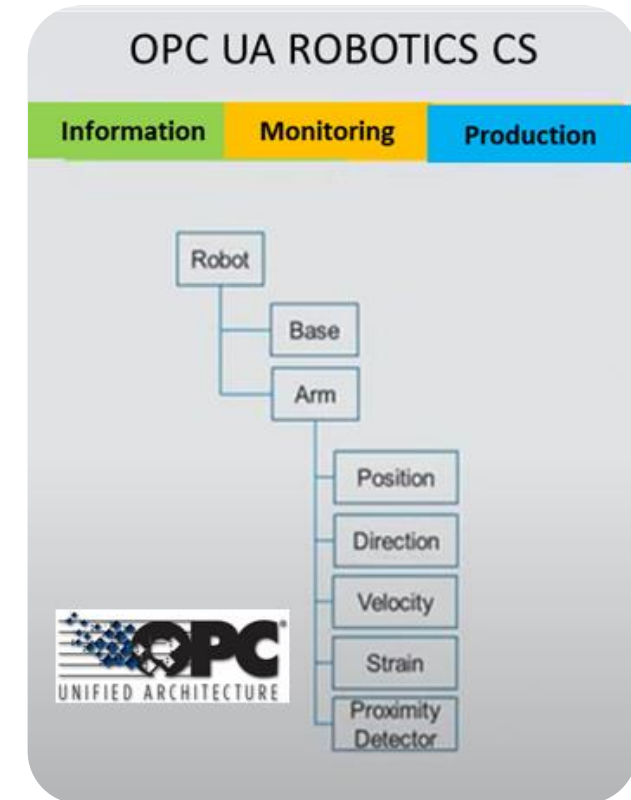


Information Model - Robot

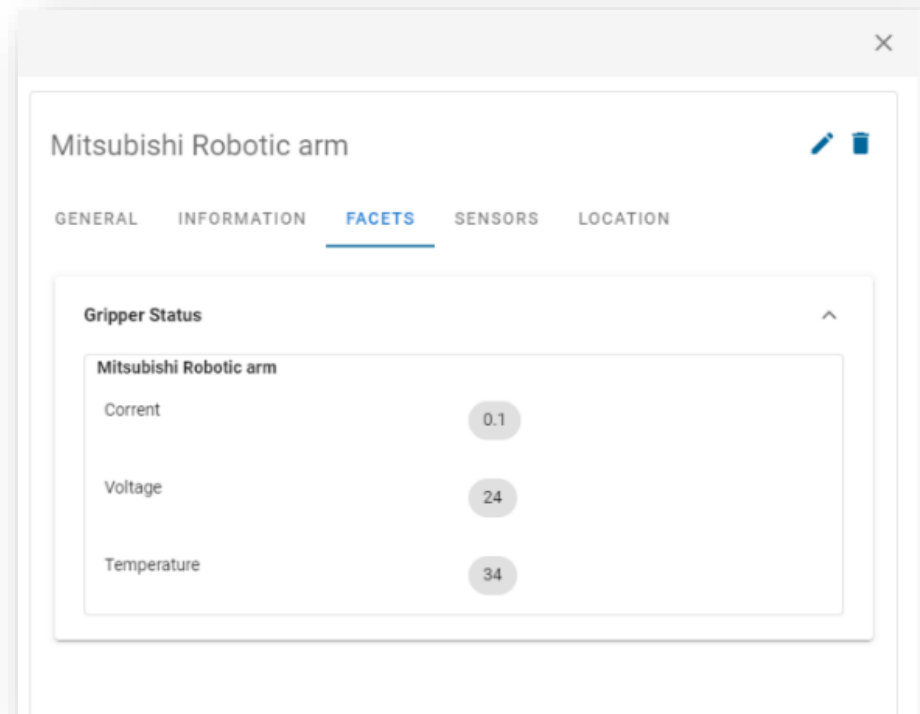


Information Model secondo specifiche **UMATI**

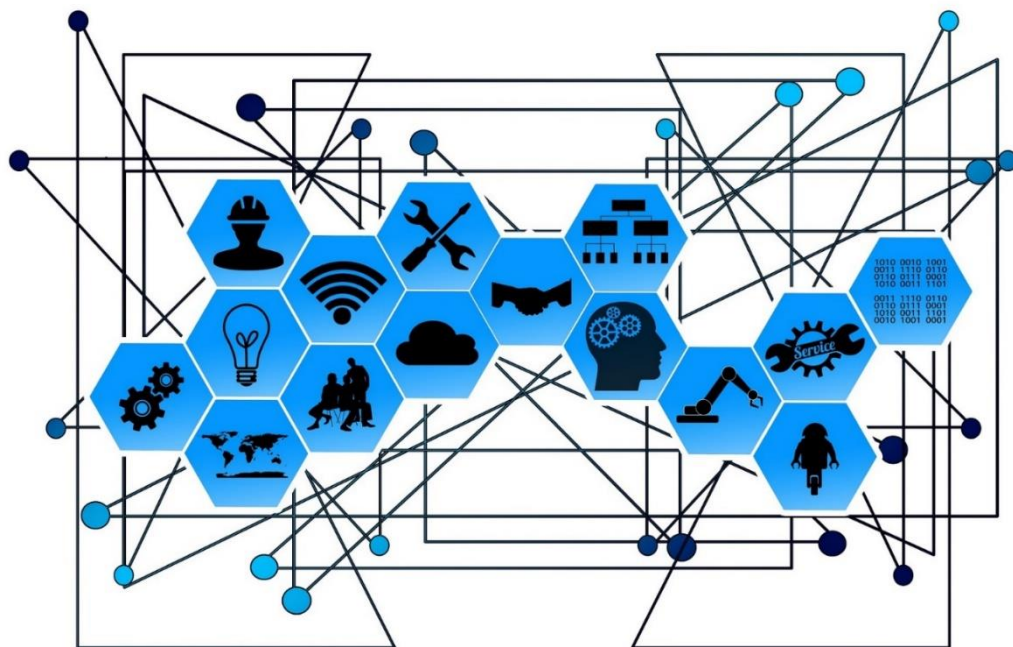
Digital twin che espone le principali variabili di sistema



Information Model - Gripper



Ecosistema intelligente



La centralità dei DATI

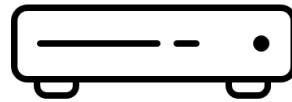


Raccolta e condivisione dati

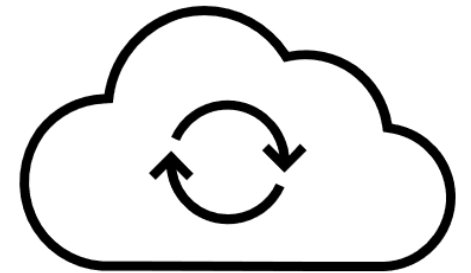
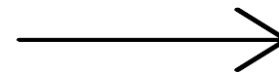
ESOSensori



Bluetooth
→



Edge computer

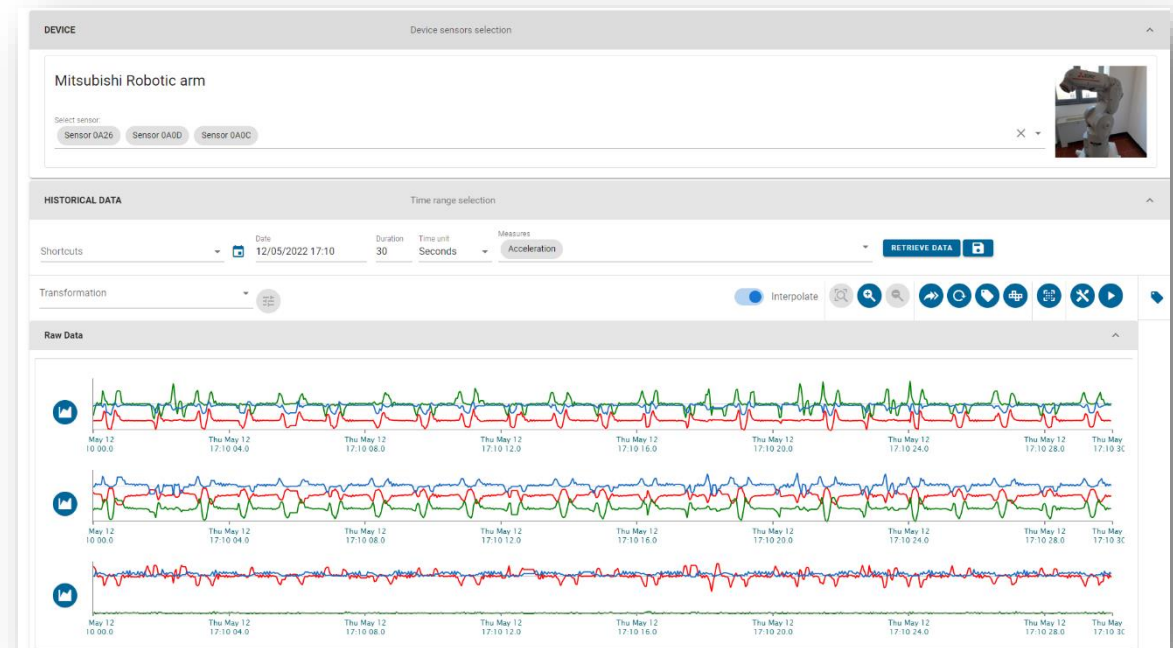
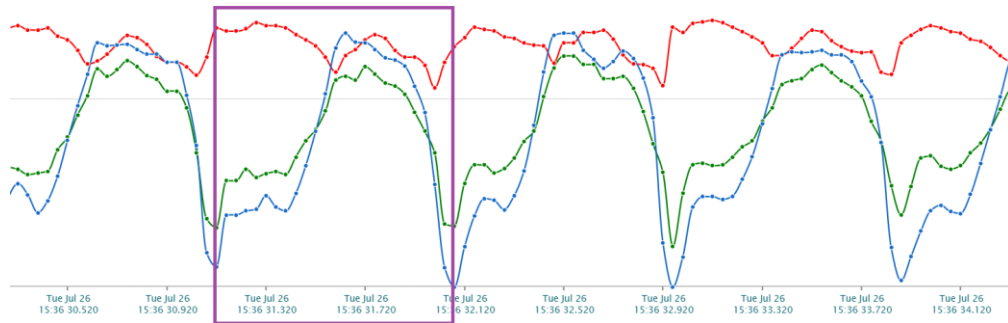


Modello AI in Cloud

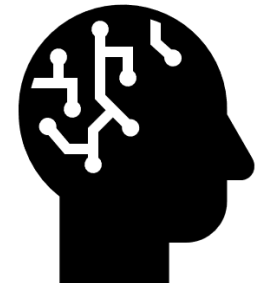
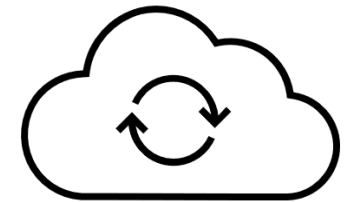
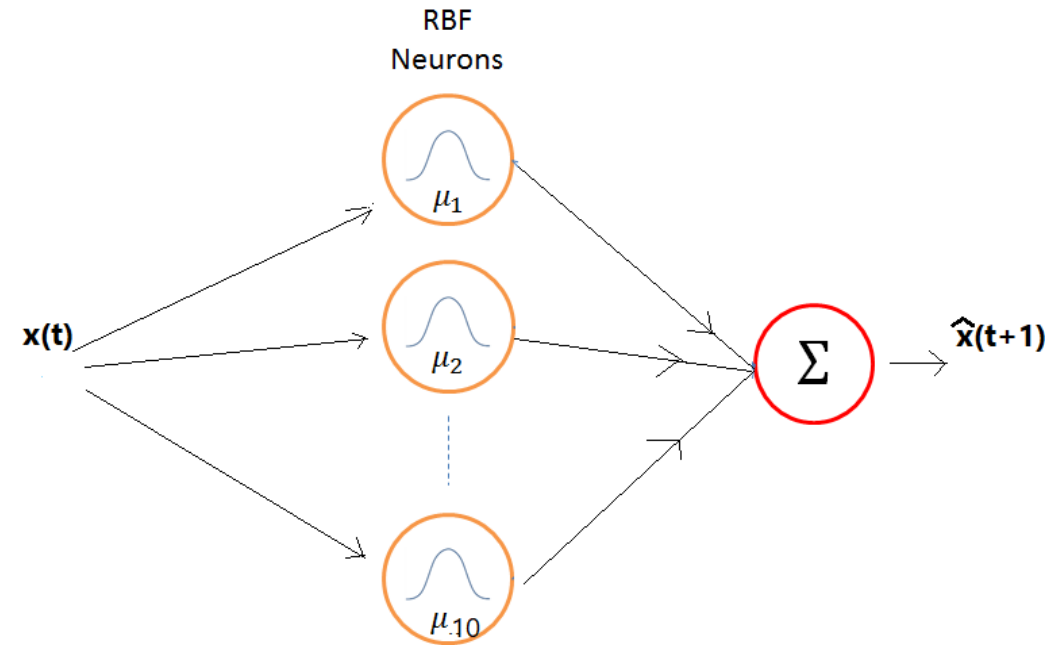
Addestramento del modello IA in Cloud

I dati delle accelerazioni vengono campionati

Utilizzati per addestrare il modello di IA



Addestramento modello IA - RBF

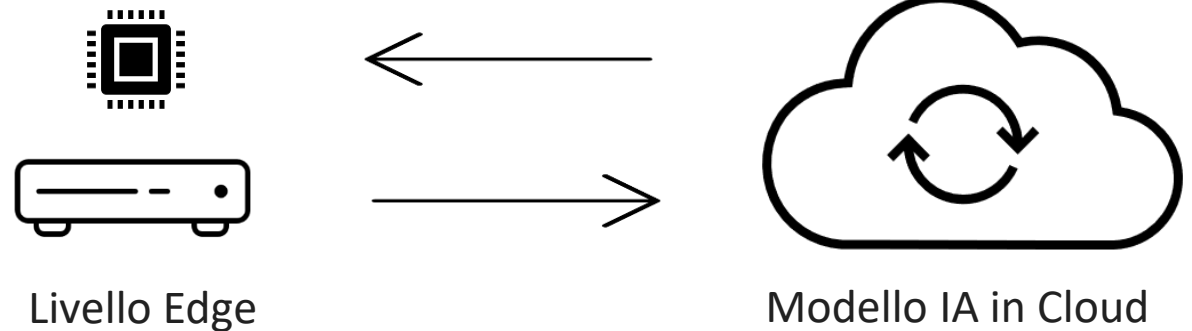


Edge Computing

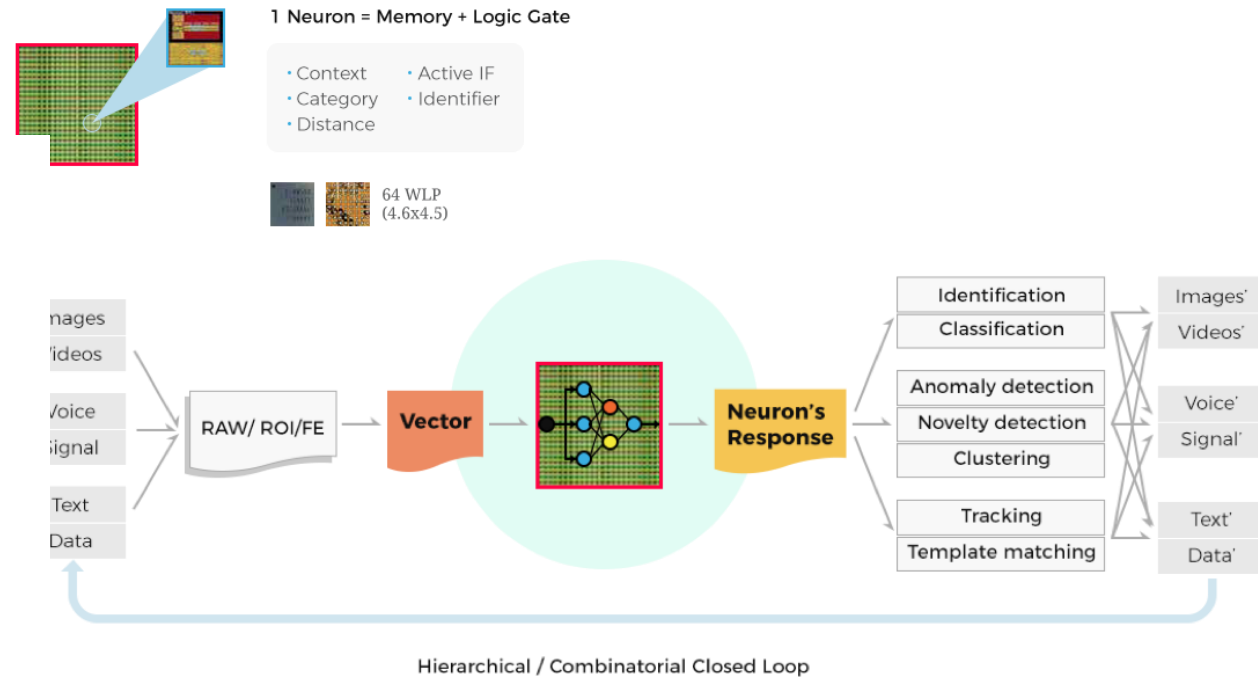
Modello IA addestrato in Cloud

Intelligenza su Edge Computing

Scheda hardware neurale



Addestramento modello con immagini



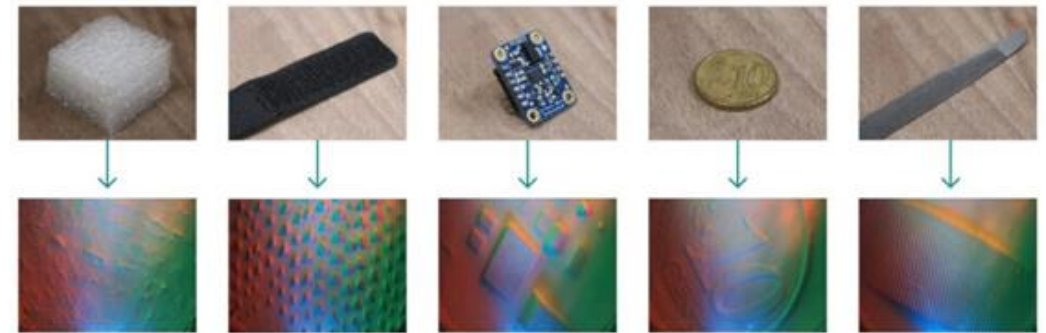
Sensore tattile

Struttura modulare

Algoritmi Touch Intelligence

Riconoscimento difetti di superficie

Ambito tessile, farmaceutico e
meccanica di precisione

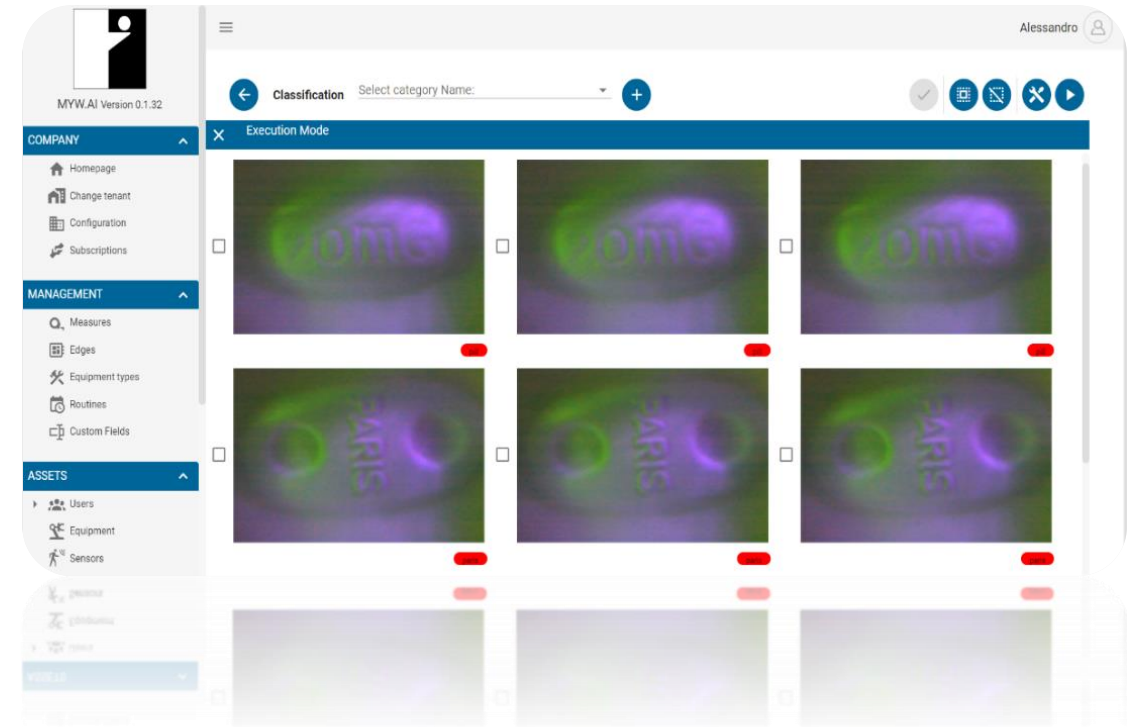
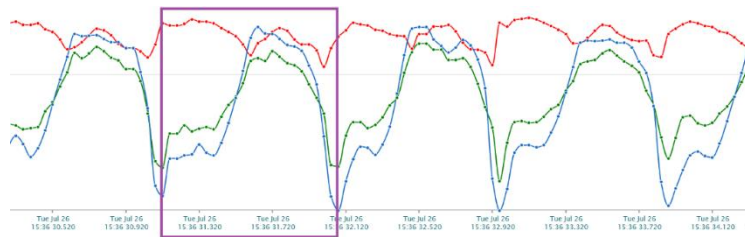


Learning – Serie storiche ed immagini

Manutenzione predittiva

Monitoraggio del processo in tempo reale

Controllo automatico della qualità



Blockchain – Non Fungible Token

Immutabilità

Tracciabilità dei trasferimenti

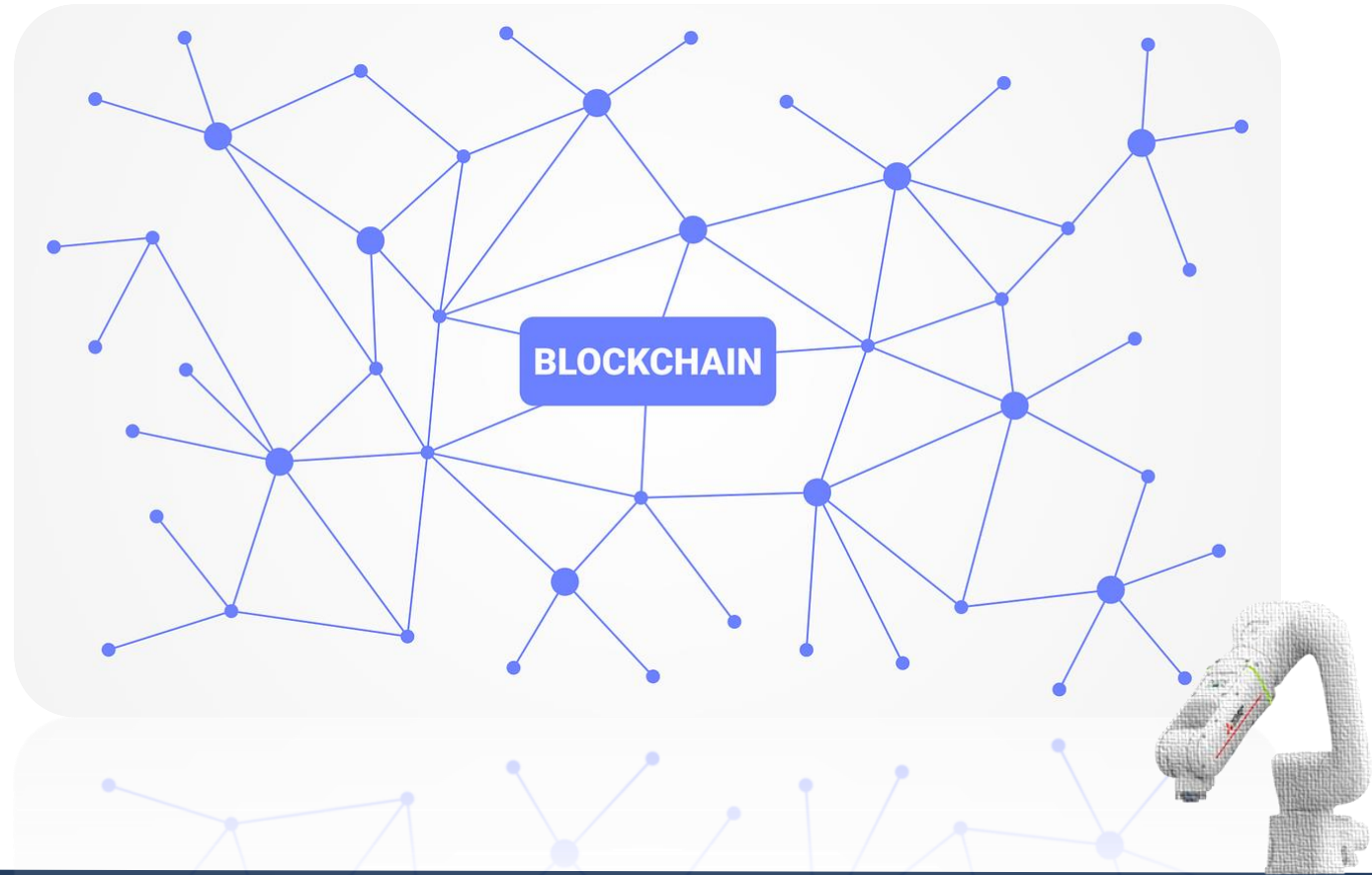
Decentralizzazione

Unicità dell'entità digitale

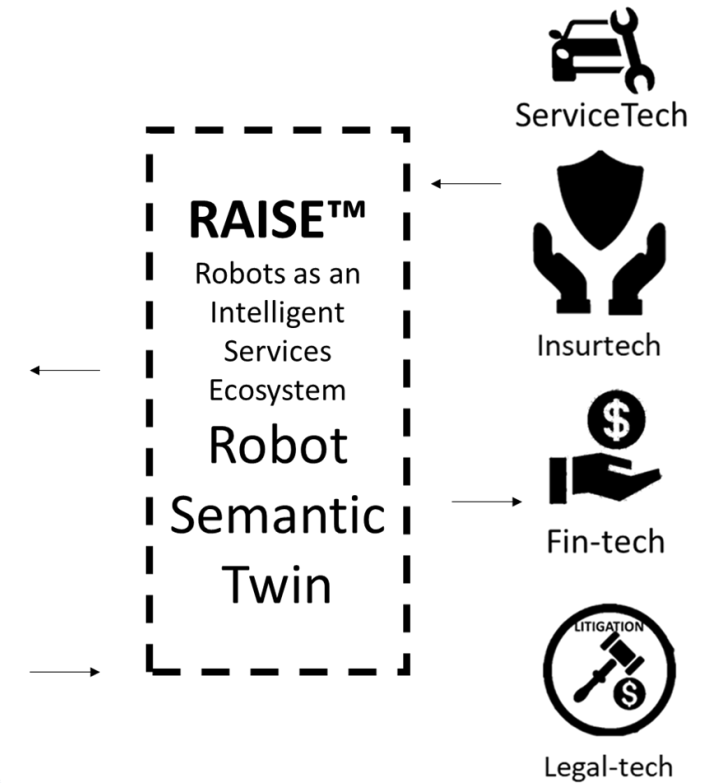
Accessi sicuri



SMART CONTRACT



Progetto RAISE



Nuove prospettive - Metaverso

Metaverso Industriale

Standardizzazione

Interoperabilità

Robot as a Service

Logistica & Formazione



DEMO Collaborativa





FORUMECCATRONICA



GRAZIE PER L'ATTENZIONE!