

Servizi a valore aggiunto e infrastruttura digitale

Martina Stefanon





Born from our digital lymph, **IMA Digital is the Group Global Project that aims to create innovative activities and services for the manufacturing world**, responding to disruptive innovation in the sector.

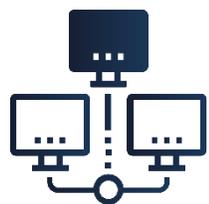
The initiative involves all the companies of IMA Group and launches a series of projects, activities and actions aimed at optimizing internal and external processes.

We implement 4.0 technology within production flows and train operator

in the use of the most innovative digital tools, integrating technological know-how and new digital skills.

The project has the ambition to generate greater effectiveness and efficiency of internal processes, generating value with improved machines and services, created to offer a personalized experience.

DIGITAL MAIN AREAS



**CONNECTED
MACHINES**



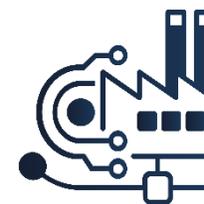
**DIGITAL
SERVICES**



**DIGITAL
TRAINING**



**DIGITAL
ENGINEERING**



**CONNECTED
ENTERPRISE**



**DIGITAL
ORGANIZATION**

DIGITAL MAIN AREAS



CONNECTED MACHINES



DIGITAL SERVICES



VIRTUAL TRAINING



ADVANCED COBOTS



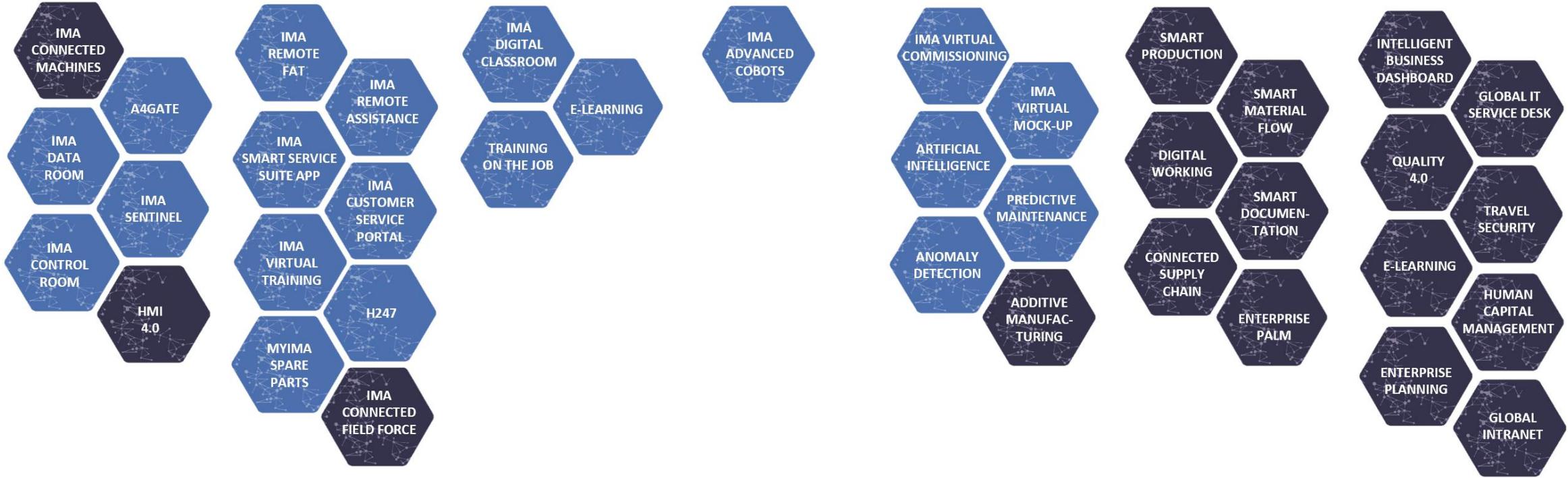
DIGITAL ENGINEERING



CONNECTED ENTERPRISE



DIGITAL ORGANIZATION

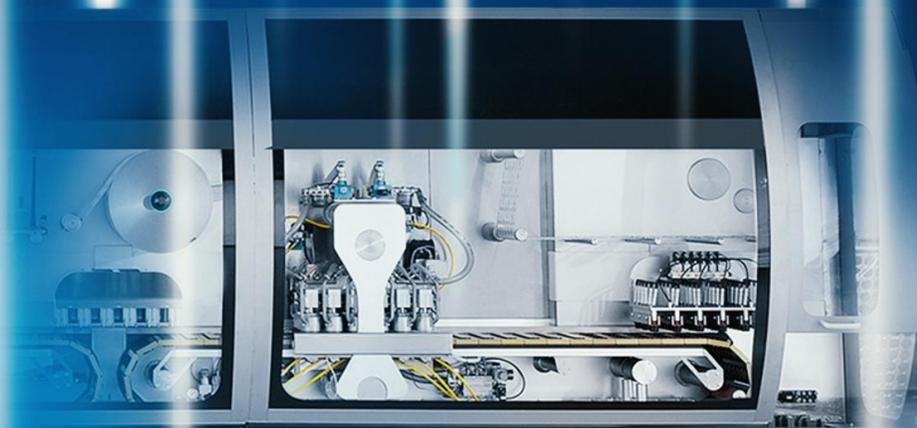


EXTERNAL PROJECTS

INTERNAL PROJECTS

IMA CONNECTED MACHINES

INCREASE PRODUCTION
EFFICIENCY



ASSET MANAGEMENT

Business relevance for IMA

AI & DATA IMPACT

BUSINESS

- Data Driven Services
- Revenues
- New Business Models
- Customer loyalty

TECHNICAL DEPARTMENT

- Design
- Engineering

AFTER SALES

- Remote Assistance
- Spare parts
- Maintenance
- Field Force
- Retrofit & Rewamping
- New Services

R&D

- AI & Data driven engineering

ASSET MANAGEMENT

Business relevance for Customers

AI & DATA IMPACT

RISK MANAGEMENT

- Equipment health
- Anomaly detection
- Predictive Maintenance
- Overall Risk Index
- Collaborative Prognostics

PERFORMANCE

- OEE improvement
- Criticalities evaluation
- Efficiency loss Analysis

AUTO REGULATIONS

- Automatic system Setup
- Self setting adjustment

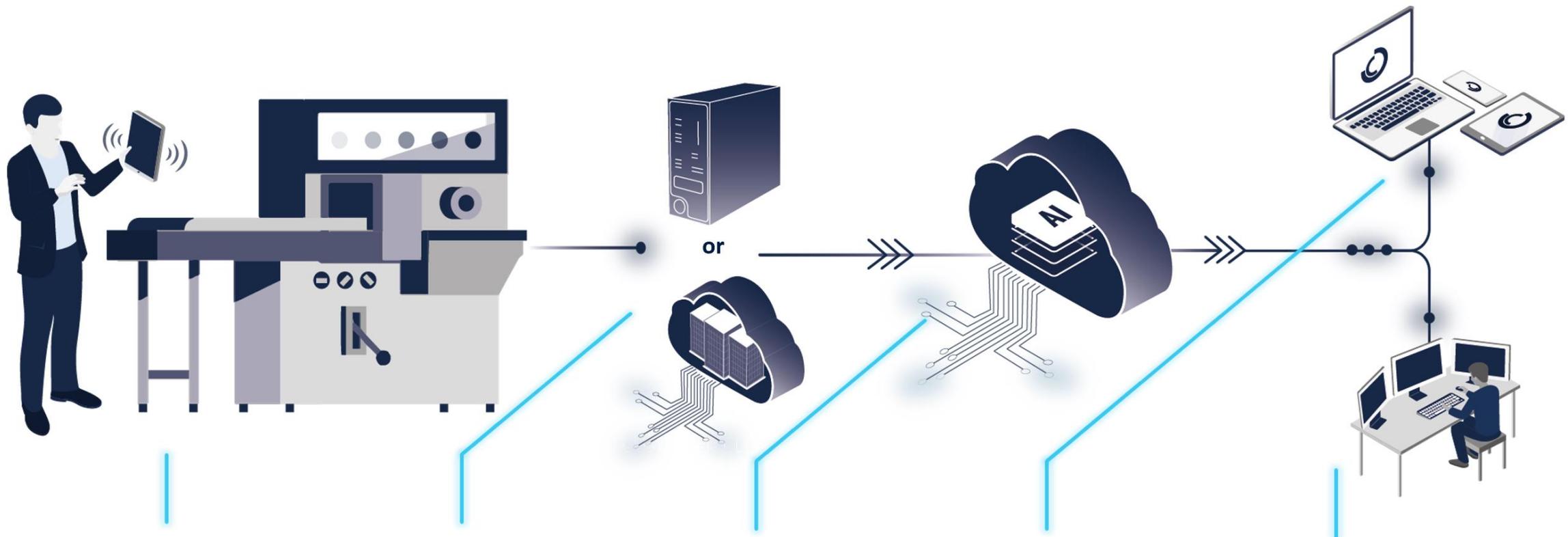
INTEGRATION

- Warehouse/Logistics
- Production
- ERP - MES



IMA CONNECTED MACHINES

IIOT BACKGROUND CONFIGURATION



IMA CONNECTED MACHINE

Technologically advanced machines equipped with sensors to ensure full control of the entire production.

A4GATE

Integrated solution to protect data confidentiality or data collection directly from **CUSTOMER CLOUD**, based on a cloud-to-cloud connection.

IMA DATA ROOM

Virtual space in cloud where all information coming from the systems is collected and stored, and where the data analysis software programs reside.

IMA SENTINEL

Platform for continuous and autonomous monitoring of the system's performance wherever it is needed.

IMA CONTROL ROOM

Set of services, to improve production, based on detailed reports, specific alerts and general support 24/7.

A4GATE

PRESERVE DATA
CONFIDENTIALITY,
SYSTEM OPERATIONS
AND OPERATOR'S
SAFETY



THE PROBLEM IS NOW SOLVED WITH A4GATE, THE INTEGRATED HARDWARE AND SOFTWARE SOLUTION TO PROTECT DATA CONFIDENTIALITY, SYSTEM OPERATIONS AND OPERATOR SAFETY.

A4GATE

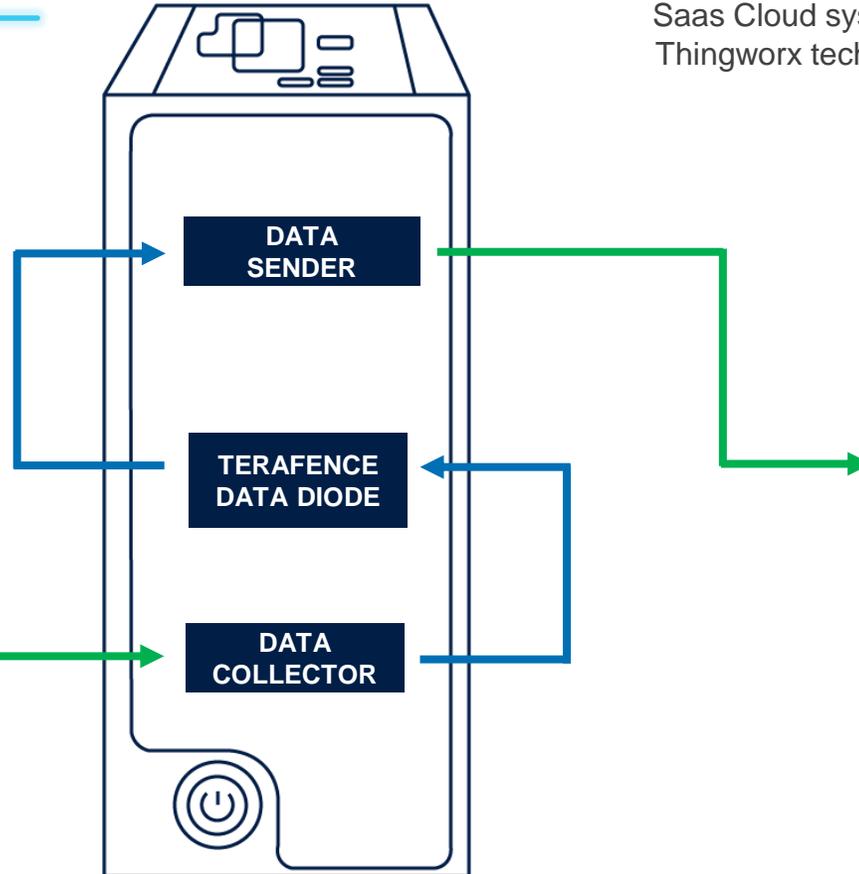
- is the safe place between your smart machines and external remote uncontrolled accesses;
- integrates fundamental functions for the world of the smart machines. This hardware and software solution configures edge components of IOT software in order to make full use of the security features;
- manages over 150 interface protocols (OPCxx, MQTT, Modbus and EtherNet/IP...) as well as situations of network failure and electrical continuity.



A4GATE

OUTGOING FLOW OF INFORMATION

The data are transferred through the internal component made by our Israeliian partner Terafence using UDP protocol that is at level 1 of ISO/OSI.

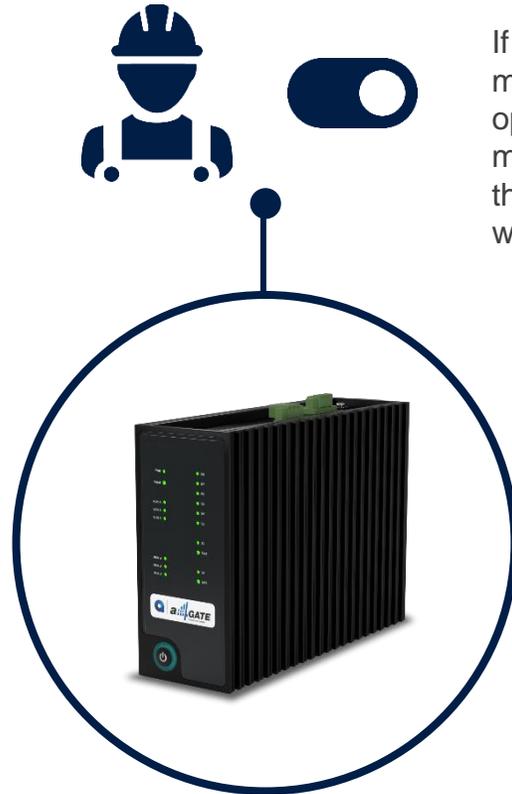


The data collection and the SaaS Cloud system is based on Thingworx technology platform.



A4GATE

EXTERNAL ACCESSES



If it is necessary to enter temporarily from the outside for maintenance, A4GATE is equipped with a switch capable of opening a network path from outside to inside, to be activated manually and with supervision, with active monitoring and logging through the Control Room of what is happening. Opening is timed with a configurable interval.

IMA DATA ROOM

THE VALUE OF DATA



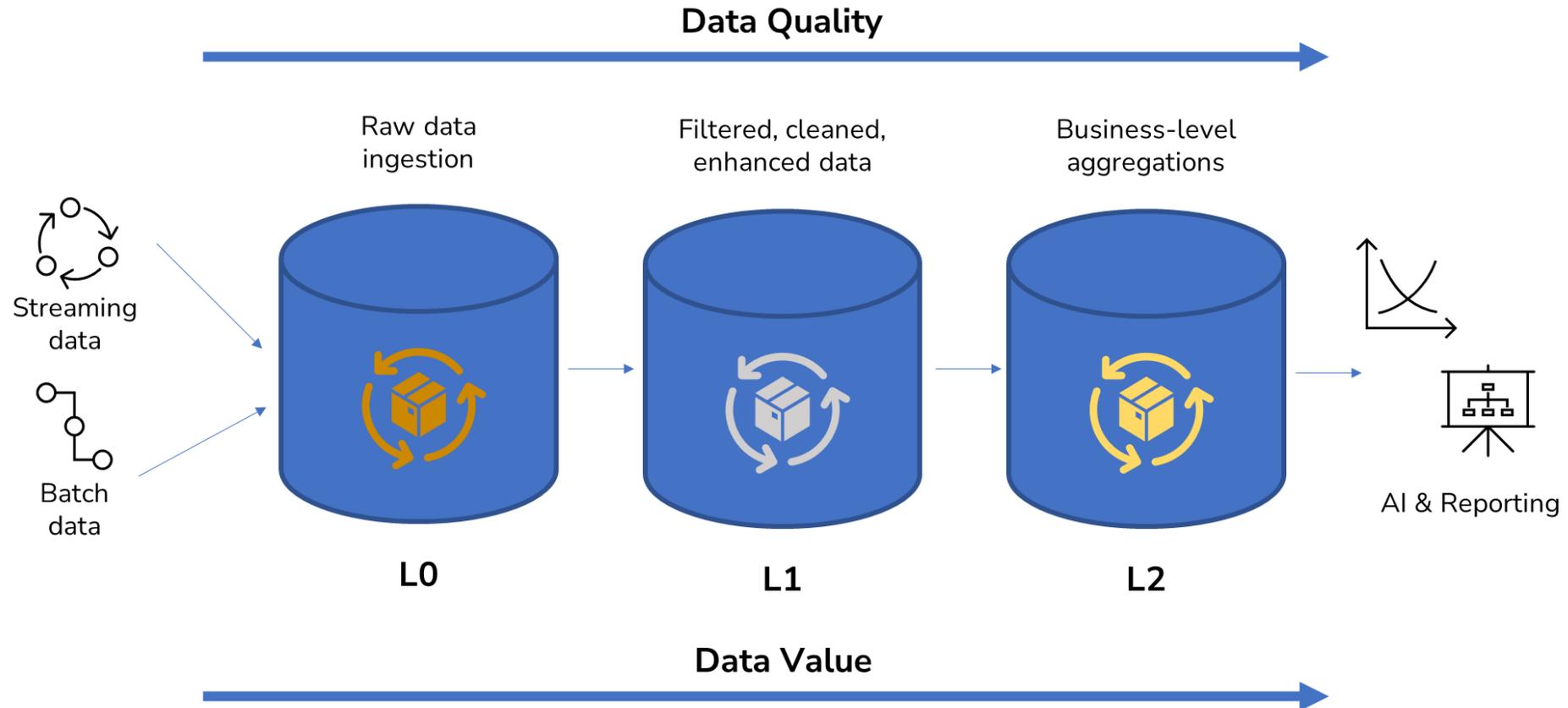
IMA DATA ROOM



STORE, PRESERVE & REWORK PRODUCTION DATA

- Technology based on PTC ThingWorx
- Microsoft Azure Cloud
- Data-lake based on Influx DB and PostgreSQL
- Secure access via API only
- Modularity and scalability
- Historicalization on secondary systems
- Customer segregation

IMA DATA MANAGEMENT: LAYER AND DATA QUALITY



IMA SENTINEL

THE DATA-DRIVEN SERVICES
PLATFORM FOR CONTINUOUS
AND AUTONOMOUS
MONITORING OF THE SYSTEM'S
PERFORMANCE



UNLOCK THE FULL POTENTIAL OF YOUR PLANT



FULL POWER IN A FEW CLICKS

Is analysing vast amounts of data taking up too much time, resources, and manual effort?

With IMA Sentinel, you can automate the collection of production data, alarms, good products, rejects, causes of rejects, machine downtime, and critical trends.



LET OTHERS DO THE HEAVY WORK

Are you facing challenges in analysing data and achieving satisfactory results and reports?

IMA Sentinel is the ideal tool to support you in efficiently comparing trend curves, conducting golden batch analyses, and swiftly accessing production history.



GET STRAIGHT TO THE POINT

Are you struggling to investigate individual causes and associated alarms that are impacting productivity?

With IMA Sentinel, you can automatically and instantly identify the causes of rejects, generate Pareto charts, and pinpoint the alarms that have had the greatest impact on production performance.



CONNECT THE RIGHT ELEMENTS

Are you finding it challenging to correlate products, alarms, and rejects to determine where intervention is truly required?

With IMA Sentinel, you can effortlessly and automatically correlate formats and products with alarms and rejects, enabling you to quickly identify areas that need intervention.



LOOK AHEAD TO THE FUTURE

Do you need a comprehensive view of long-term quality in your plant?

With IMA Sentinel, you can identify trends and potential plant degradation that extend beyond the short and medium term, providing you with a broader perspective.



FULL REPORTS IN A MOVE

Are you overwhelmed by large volumes of data that are challenging to interpret and process using traditional tools?

With IMA Sentinel, you can automatically generate reports similar to the current ones, while storing them in production databases in a computerized and organized manner.



OPEN YOUR MIND

Are you facing difficulties in obtaining visibility into machine and line efficiency?

With IMA Sentinel, you can gain complete visibility on the calculation of overall equipment efficiency (OEE) for the entire production line, as well as for each individual machine within the plant.



BREATHE AND TAKE YOUR TIME

Are you interested in a comprehensive system that can instantly alert you to excessive rejects caused by malfunctions?

Sentinel seamlessly connects and integrates all machines, PLCs, and HMIs, offering a 360° view of production processes and real-time alarms that can help mitigate efficiency losses.

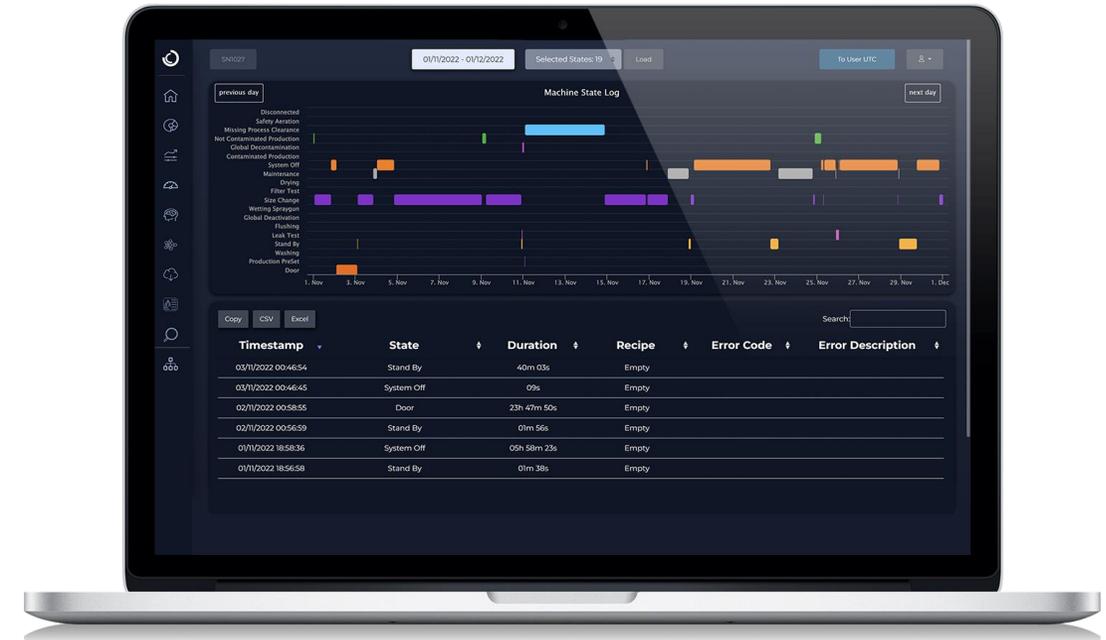
UNLEASH MAXIMUM OEE AND PERFORMANCE



OEE & Performance Management

Boost OEE and Performance Management with Actionable Insights. Gain access to dedicated dashboards for data efficiency and control, enabling you to enhance overall performance through:

- Smart and dynamic actions empowering operators to improve conditions.
- Machine data statistics for intelligent line harmonisation.
- Real-time average performance for precise production planning.

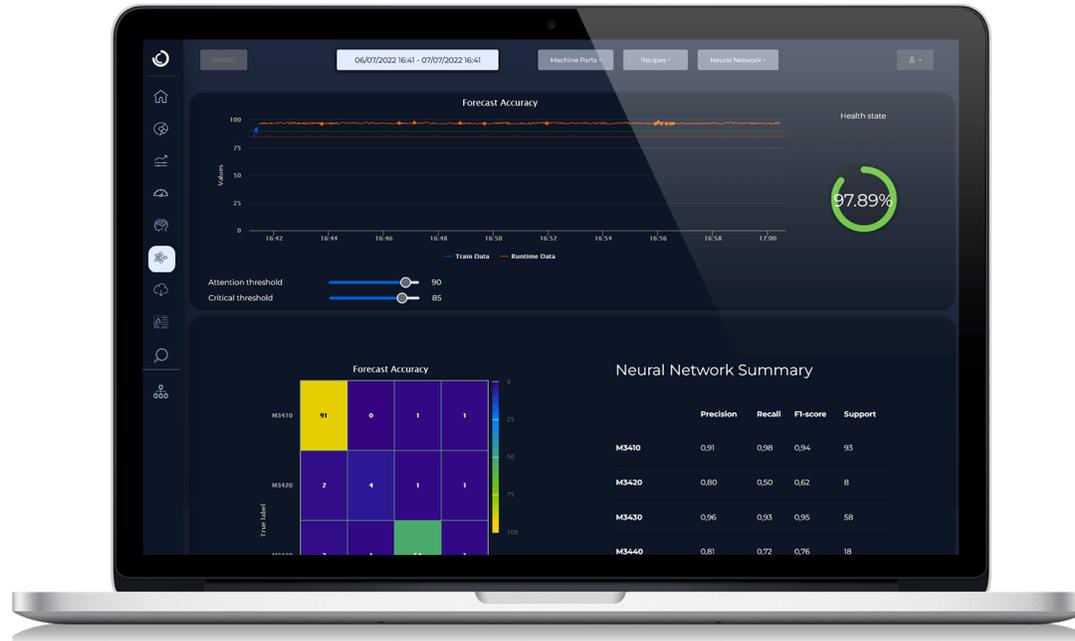


Advanced Monitoring

Unlock the Power of Advanced Algorithms to Uncover Hidden Anomalies:

- Assess system reliability by comparing critical parameter trends;
- Optimise preventive maintenance while ensuring reliability;
- Evaluate the stability and repeatability of specific process cycles, and monitor the performance of critical parameters.

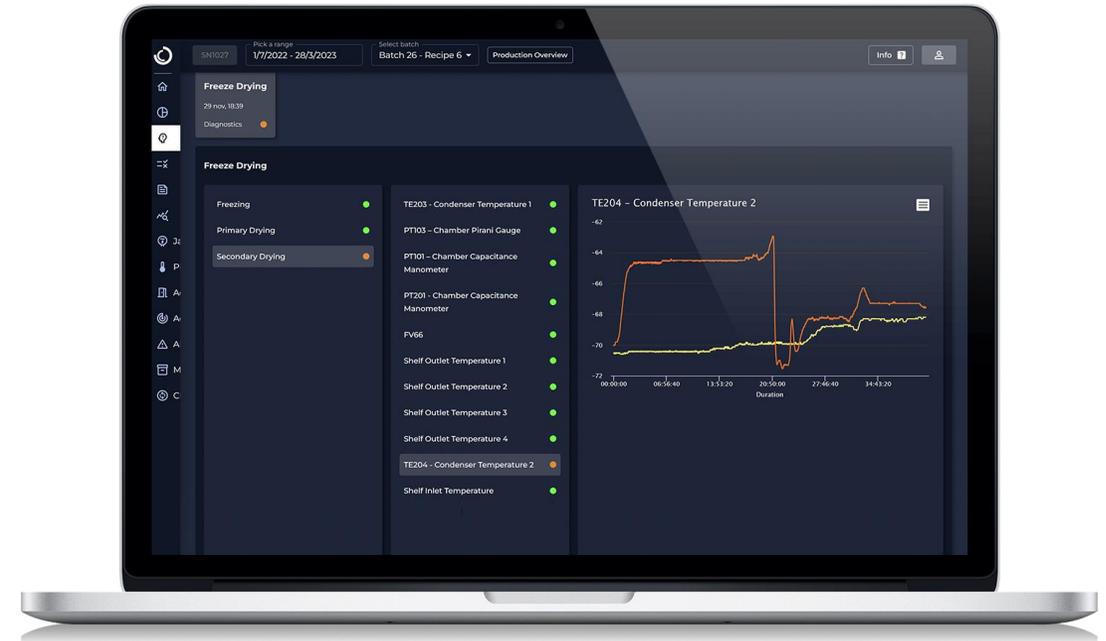
UNLEASH MAXIMUM OEE AND PERFORMANCE



Predictive Maintenance

Empower predictive maintenance with advanced anomaly detection algorithms.

- Utilise custom mathematical models for accurate anomaly detection and prediction;
- Extract patterns to predict anomalous conditions and identify potential future failures;
- Detect temperature fluctuations and uncover critical oscillating patterns;
- Predict component failures for proactive maintenance strategies.



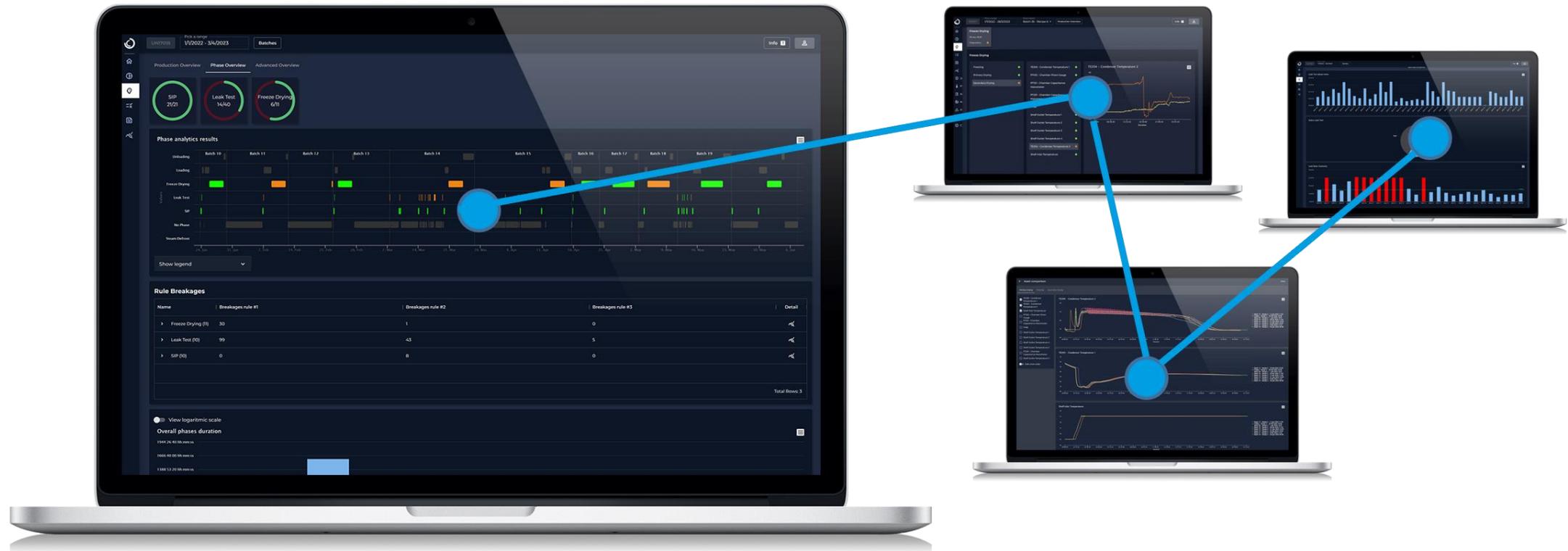
Descriptive & Diagnostic Analytics

Drive continuous process control with sentinel, monitoring system variables and indicators. Leverage smart analytics to investigate root causes:

- Identify where and why problems occur in the process;
- Gain insights to restore processes to normal activity.

DETECT ANOMALIES AND ROOT CAUSES OF DOWNTIME WITH AI-POWERED SUPPORT. EASILY IDENTIFY ISSUES IN A FEW CLICKS.

Sentinel simplifies and automates the entire analysis process: from the general efficiency monitoring page, you can delve into the details of each performance through guided navigation, using simple and intuitive dashboards. This allows for the immediate identification of issues that slow down or cause malfunctions in production, as well as for an equally efficient implementation of corrective actions.



IMA ALGOMARKET

Accessible algorithm-driven solutions for enhanced data collection and digital applications

Discover the power of choice with IMA Algomarket. Our platform offers a predefined menu or virtual shelf of algorithm-driven use cases, making advanced algorithms easily accessible to all.

- Efficient data collection
- Easy to use digital applications
- An out-of-box solution
- Advanced algorithms as a service



IMA SANDBOX



Collaborative Platform for Algorithm Co-Development and Partnership

Step into the IMA Sandbox, a collaborative architecture that brings together centralized data collection and management in a cloud-based “playground.” In the sandbox, IMA builds real partnerships with customers, combining our expertise as machine builders with their in-house production process knowledge.

- Collaborative architecture
- Centralized data collection & management
- Cloud-based “playground”
- Co-development of algorithms

IMA CONTROL ROOM

INCREASE THE
EFFICIENCY ON THE
INSTALLED BASE



IMA CONTROL ROOM



INCREASE THE EFFICIENCY ON THE INSTALLED BASE

The Industry 4.0 model cannot ignore the data and the value it can generate. Connections via digital networks, organization and interpretation of information are the ways to **obtain optimized production results through event analysis, preventive and predictive maintenance.**

IMA Group has carried out various projects regarding the interconnectivity of machines, creating services and products capable of optimizing the user experience in the plants. These include the **Control Room services, designed to make the most of the data arriving from the machines and able to support customers in improving their production processes.** Using the know-how of IMA, it becomes possible for the customer to **receive detailed reports, specific alerts and general support 24/7 for taking charge of operational problems,** with the aim of generating new technological solutions and improve production results.

IMA CONTROL ROOM

SERVICES

ALERTING

Should anything unusual happen, automatic alarms are generated by the system to alert the Control Room operators. It thus becomes possible for the Control Room to promptly inform customers so that they can intervene immediately.



IMA CONTROL ROOM

SERVICES

REPORTING

On a periodic basis, the Control Room will issue reports on how machines are performing, how they are used, if anything unusual has been noticed relating to certain parameters, material, products or external conditions, trying to identify trends which can help improving production processes.



IMA CONTROL ROOM

SERVICES

GENERAL SUPPORT 24/7, taking charge of operational problems with:

- a. Collection of the event details and technical issues
- b. Verification of the control room data on the machine up to that moment
- c. Preparation of a specific report to activate the second level technical assistance service, immediately if during the work shift or as soon as available. The importance of capturing data and information relating to the event as close to its occurrence is highlighted. Otherwise, it could take hours or entire shifts before a contact is made, with obvious difficulties in reconstructing the event.
- d. Documentation of the event and maintenance in the control room of a system dossier in terms of operation and data.



Grazie per l'attenzione

IMA DIGITAL
GREEN SOUL, DIGITAL BRAIN

IMA DIGITAL

IMA Digital Project represents IMA's will to support the implementation of innovative technological solutions in the manufacturing field. This corporate initiative involves all companies of the Group and includes various activities relevant to Industry 4.0 concepts.

The project has the ambition to generate higher efficacy and efficiency of the internal processes. It aims to create value by actively responding to disruptive innovation in the industry.



Founded in 1961, IMA is a world leader in the design and manufacture of automatic machines. The Group has approximately 6,200 employees, of which approximately 2,400 abroad, and has 45 production plants in Italy, Germany, Switzerland, the United Kingdom, the United States, India, Malaysia, China and Argentina. IMA has an extensive sales network consisting of 29 branches with sales and service in Italy, France, Switzerland, the United Kingdom, Germany, Austria, Spain, Poland, Israel, Russia, the United States, India, China, Malaysia, Thailand and Brazil, representative offices in Central and Eastern European countries and more than 50 agencies covering a total of approximately 80 countries.

To learn more IMADigital@ima.it
Or visit ima.it/ima-digital

