



The 22nd International Asset, Facility & Maintenance Management Conference

Revolutionizing Industrial Performance :

The Disruptive Power of Sustainable Operability in the Age of AI and Net-Zero Carbon Emission

SAMIRA BEN ALI
Presidente of MARAMM



The 22nd International Asset, Facility & Maintenance Management Conference



MOROCCAN ASSOCIATION OF RELIABILITY
ASSET MANAGEMENT & MAINTENANCE

الجمعية المغربية للاعتمادية وإدارة الأصول والصيانة

Independent Moroccan community of professionals, including, manufacturers, solution-providers, decision-makers, start-ups, universities, clusters, experts, and certified practitioners, gathers around a leading platform of sustainable asset management, maintenance, and reliability.

Our Mission :

To provide an interactive platform for achieving excellence at a WORLD CLASS level, adhering to international standards.

Key Objectives :

- Foster a dynamic knowledge exchange environment
- Promote professional development
- Deliver impactful learning experiences
- Share best practices in asset management, reliability and maintenance

Platform Capabilities :

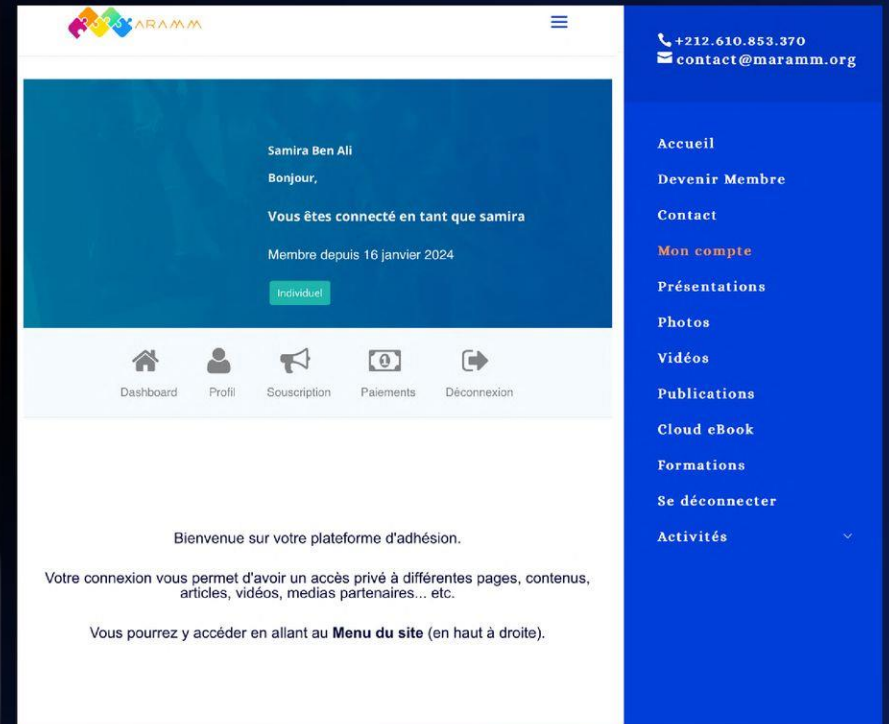
Knowledge sharing, best-practices and certifications through initiatives, including :

- National, African, and international conferences
- Targeted training programs
- Surveys
- Strategic projects
- Interactive technical seminars
- Masterclasses



Many sectors : Mines, Oil & Gas, Green H2, Renewable Energies, Manufacture Industry, Water management

Personnal Member space through MARAMM platform in the website maramm.org



The screenshot shows the MARAMM website interface. At the top left is the MARAMM logo. On the right side, there is a contact information box with a phone icon and the number +212.610.853.370, and an email icon with the address contact@maramm.org. Below this is a navigation menu with the following items: Accueil, Devenir Membre, Contact, Mon compte, Présentations, Photos, Vidéos, Publications, Cloud eBook, Formations, Se déconnecter, and Activités. The main content area displays the user's name, Samira Ben Ali, and a greeting: "Bonjour, Vous êtes connecté en tant que samira". It also indicates the user has been a member since 16 janvier 2024 and provides a button labeled "Individuel". Below this is a secondary navigation bar with icons for Dashboard, Profil, Souscription, Paiements, and Déconnexion. The main text area contains a welcome message: "Bienvenue sur votre plateforme d'adhésion." followed by a note: "Votre connexion vous permet d'avoir un accès privé à différentes pages, contenus, articles, vidéos, medias partenaires... etc." and a final instruction: "Vous pourrez y accéder en allant au **Menu du site** (en haut à droite)."





20 years of proven international experience in various fields, including industry, Industry X.0 roadmaps, decarbonization strategies, strategic studies, ATEX regulations (including GreenH2), resource efficiency (including water and wastewater management), maintenance and asset management, and crisis and risk management.

We analyze each need to achieve targeted goals that deliver real added value through cost-effectiveness, performance, and sustainability.

Clients : Europe, Africa, and Middle East.

We are committed to achieving its objectives while ensuring post-project monitoring and strategic vigilance.



Latest uses-cases :

- Global Assessment for implementing Industry 5.0 including Asset data management and orchestration roadmap.
- Production planning scheduling and process optimization with AI for heavy, industry, water management and automotive industries.
- Workforce development in tandem with technological advancements and internationalization support for start-ups
- Digitalization of maintenance towards predictive maintenance on a European scale
- Development of a green hydrogen strategy for maritime and agriculture sectors
- Process optimization and digitalization to improve energy efficiency
- Waste Valorization: Production of Biogas, Green Electricity, and Biofertilizers



MEMBERS OF THE MOROCCAN DELEGATION / PARTNERS

SOCIETIES - EXPERTISES :



Largest custodian and supplier of phosphate-based fertilizers and associated products for soil health



Research Institute for Solar Energy and New Energies



Company specialized in advanced Reliability, Predictive Maintenance, Maintenance 4.0



Industrie provides services related to the installation and maintenance of industrial piping systems



Real-time data protection and compliance platform that uses Generative AI to safeguard sensitive information



The 22nd International Asset, Facility & Maintenance Management Conference

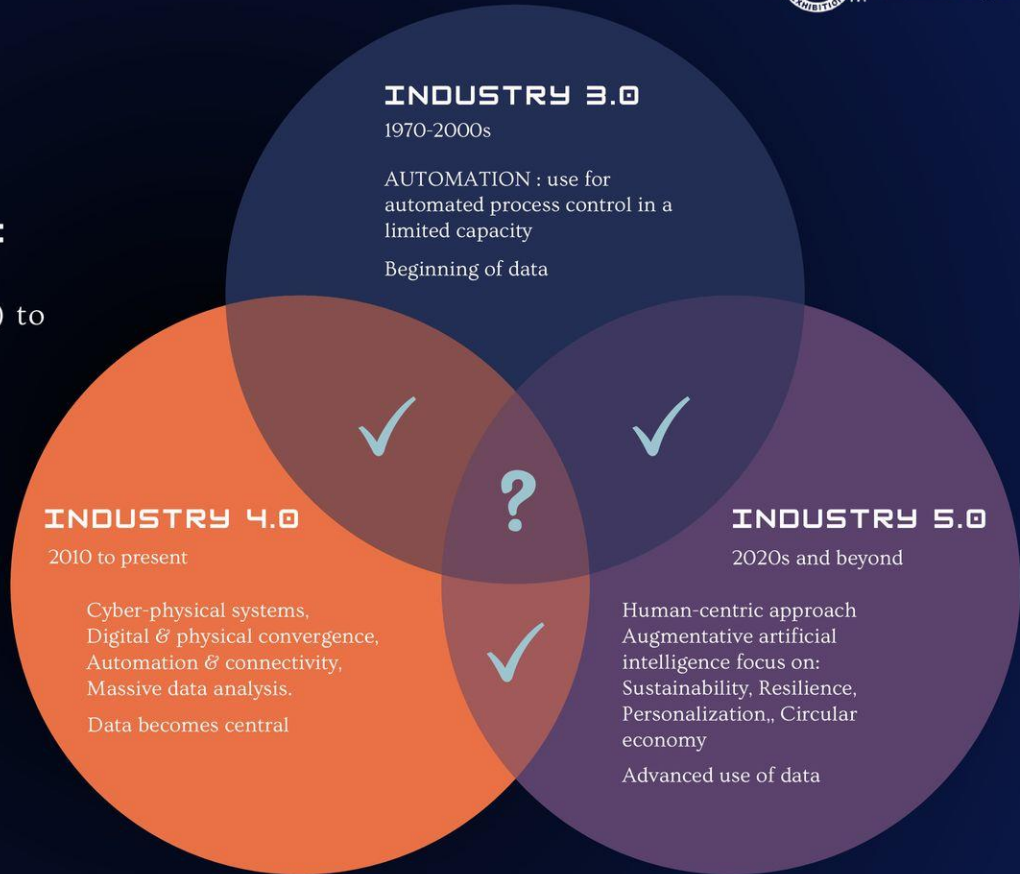
Revolutionizing Industrial Performance :

The Disruptive Power of Sustainable Operability in the Age of AI and Net-Zero Carbon Emission

SAMIRA BEN ALI
Presidente of MARAMM

BRIEF INTRODUCTION OF INDUSTRIAL TRANSFORMATION :

From automation (3.0), pure automation (4.0) to augmented collaboration (5.0)



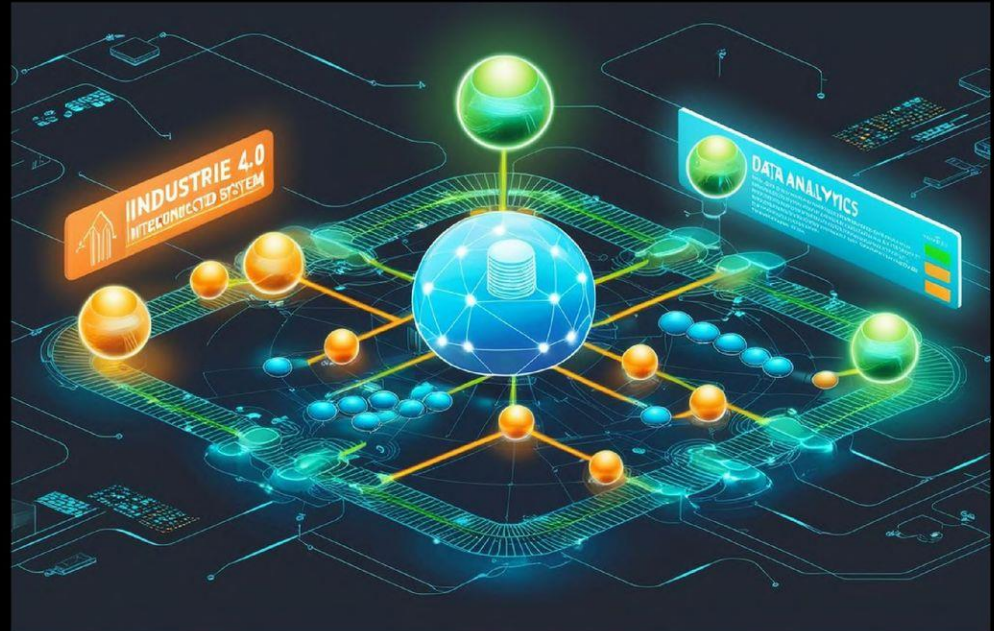
COMPARATIVE TABLE OF INDUSTRY 4.0 ADOPTION BY CONTINENT (2024)

Continent	Adoption Rate	Observations
Asia-Pacific	35% - 40%	Leaders include China (50%) and Singapore (94%), driven by strong government initiatives and technological investments.
North America	30% - 35%	The United States leads with significant investments in automation and digital technologies, particularly in manufacturing.
Europe	Approximately 30%	European countries face challenges in investment, skill development, and infrastructure improvements to fully embrace Industry 4.0.
Middle East	20% - 25%	Countries like Saudi Arabia are investing heavily in their "Vision 2030" strategy to modernize industries and integrate advanced technologies
Morocco	Expected growth to 15%	Morocco is focusing on integrating IoT, AI, and other advanced technologies, supported by government initiatives and foreign investments
South America	10-15%	Adoption remains limited, primarily in agriculture, with significant infrastructure and investment challenges.

In European and American industries :

ONLY 30% of installed sensors are fully used for data analysis.

First significant challenge : operability



OPERABILITY IN INDUSTRY 4.0 AND AI CONTEXT

DEFINITION :

- Pillar of Industry 4.0
- Enables industrial companies to fully leverage digital technologies
- Improves performance, flexibility, competitiveness, and sustainability

KEY COMPONENTS :

- Infrastructure harmonization
- Data harmonization
- Integration of IT and OT systems

BENEFITS FOR DECISION-MAKING :

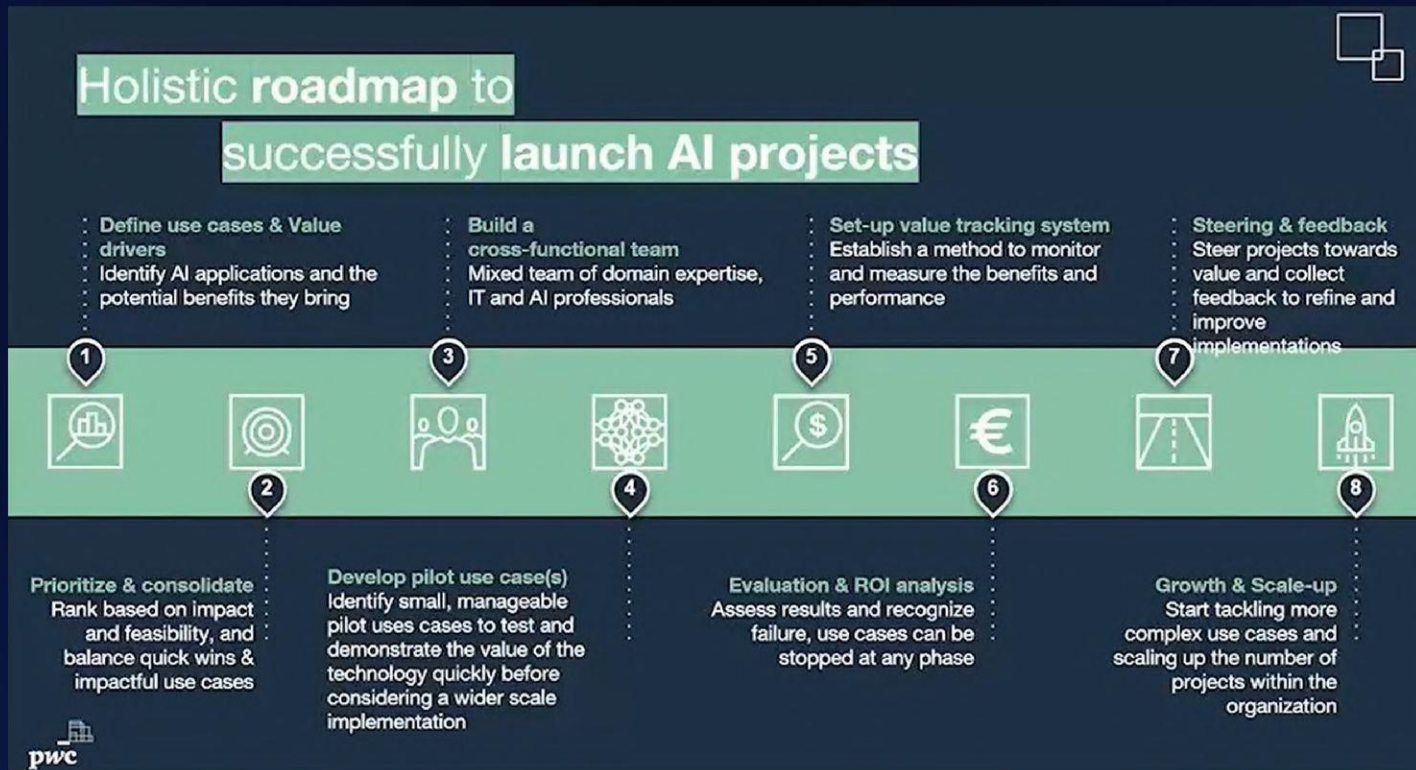
- Real-time data analysis for actionable insights
- Modeling and simulation to predict changes in factories
- Complete visibility of the value chain



SOME BENEFITS

Compagny	Description	Results
Siemens	Use of digital twins to simulate and optimize equipment performance	Reduction in product development costs by 30%, Decrease in time-to-market by 25% Reduction in manufacturing defects by 20%
Rolls-Royce	Real-time monitoring of aircraft engine health	Reduction in maintenance costs by 30% Increase in engine availability by 5-10% Savings of several million dollars per yea
Schneider Electric	Platform for energy management and automation	Reduction in energy consumption by 20-30% Improvement in operational efficiency by 10-15% Operating cost reductions of up to 25%
Caterpillar	Predictive maintenance solutions for heavy equipment	Increase in equipment availability by 10-15% Reduction in maintenance costs by 20% Improvement in customer satisfaction

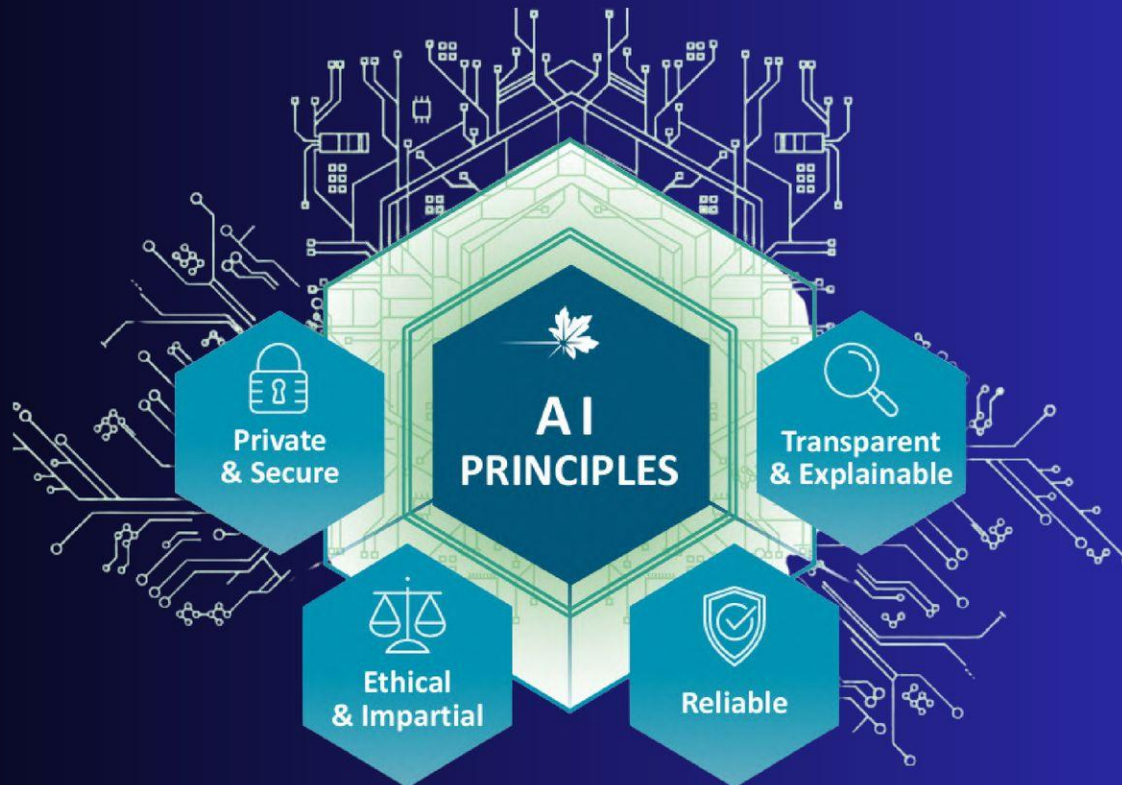
AI-DRIVEN IMPROVEMENTS IN INDUSTRY 4.0 WITH OPERABILITY



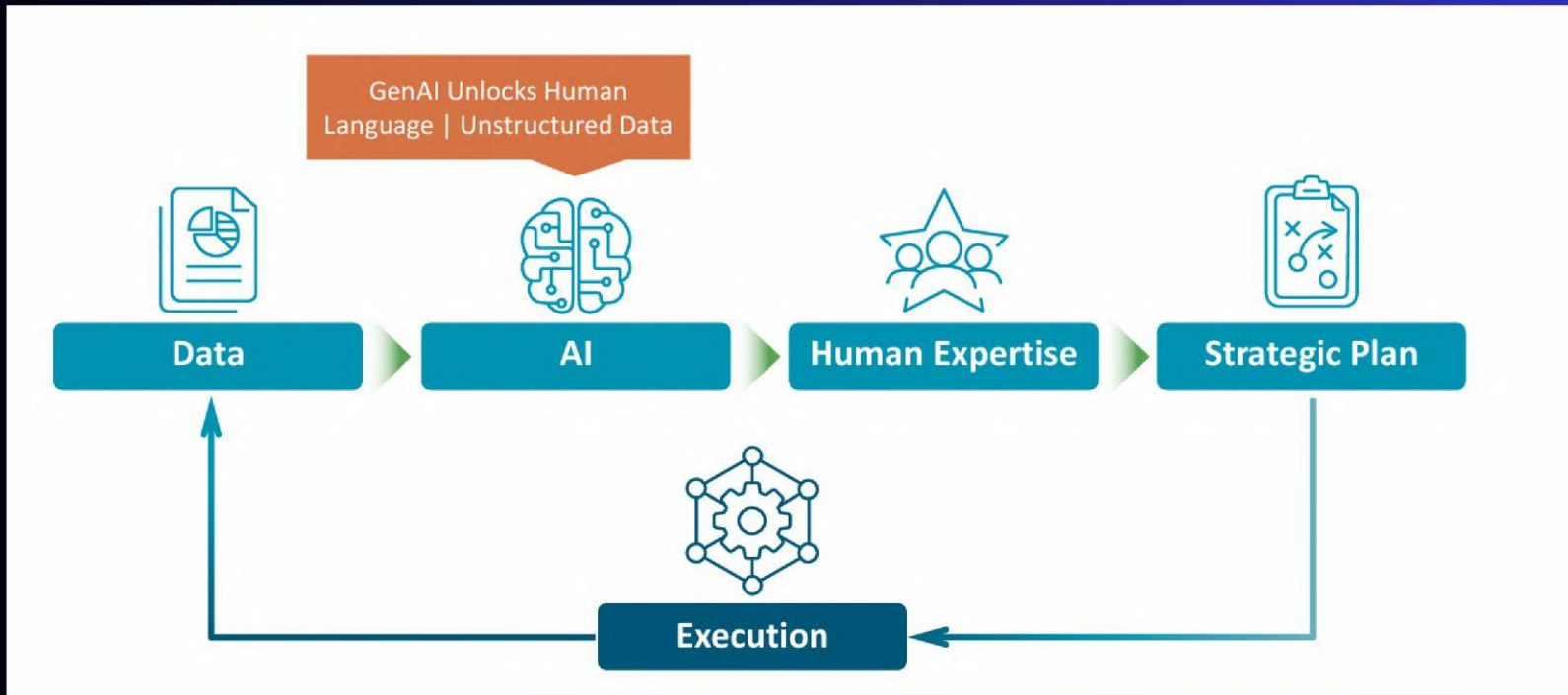
AI-DRIVEN IMPROVEMENTS IN INDUSTRY 4.0 WITH OPERABILITY

AREA OF IMPROVMENT	AI IMPACT	Additional benefit
Production Optimization	Further optimization of manufacturing processes	20% increase in operational efficiency (HEAVY INDUSTRY)
Predictive Maintenance	More precise equipment failure prediction	30% reduction in unplanned downtime
Quality Control	Detection of subtle defects	20% reduction in manufacturing defects
Workload rate (time)	Reduction of work time loss in filling out manual documents, data research	37% reduction in loss of worktime

CHALLENGES AND LIMITATIONS ABOUT AI



CHALLENGES AND LIMITATIONS ABOUT AI



CHALLENGES AND LIMITATIONS ABOUT AI

Setting the scene

Gradually and then Suddenly

CEOs are determined to drive transformative change in the face of persistent challenges and growth concerns, with a focus on their own catalytic role, investments in necessary skills and technology, and the rise of Generative AI.

70%

of CEOs said GenAI will significantly change their businesses in the next 3 years.^[1]

59%

believe GenAI will increase the spread of misinformation in their business.^[1]

45%

of CEOs believe their company will not be viable in ten years if it stays on its current path.^[1]

51%

are investing in reskilling/upskilling current workforce.^[1]

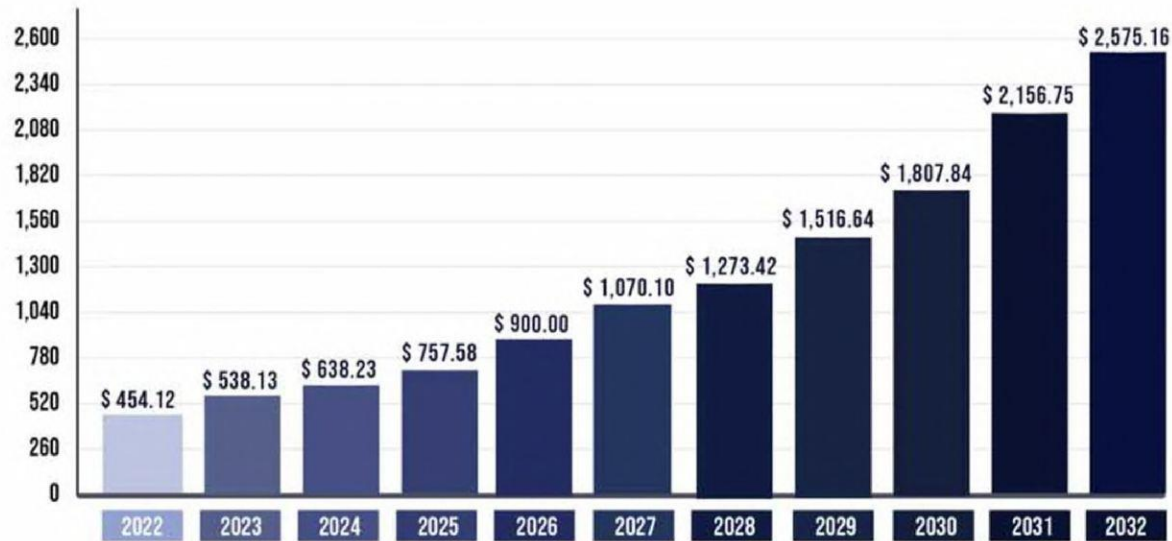
60%

of organisations see GenAI as mostly or fully an opportunity rather than risk.^[2]

CHALLENGES AND LIMITATIONS ABOUT AI

PRECEDENCE
RESEARCH

ARTIFICIAL INTELLIGENCE (AI) MARKET SIZE, 2022 TO 2032 (USD BILLION)



DATA HAS A CRITICAL ROLE IN THE IND. 4.0/5.0

- Customers want to do AI but doesn't have a strategy
- Asset Data Management is about defining a strategy, acquiring, monitoring, using, optimizing asset data to generate value
- No self-respecting Asset Management Organisation would invest in assets and then neglect them



DATA HAS A CRITICAL ROLE IN THE IND. 4.0/5.0

AI Apocalypse: 80% of Projects Crash and Burn, Billions Wasted says RAND Report

📅 August 19, 2024 👤 Vernon Keenan 📁 Industry Analysis 💬 0 Comments

A

new [RAND Corporation report](#) reveals the sobering reality behind artificial intelligence (AI) projects: despite the hype, most of them fail. The study, based on interviews with 65 experienced data scientists and engineers, exposes the root causes of these failures and offers a roadmap for success.

- Lack of clear objectives.
- Poor data quality or availability.
- Overhyped expectations vs. reality.

DATA CONSUMPTION

Annual Water Consumption of Data Centers :

- A data center consumes between 5.7 and 7.6 million liters of water per year.
- Google's data centers in the U.S. used 12.7 billion liters of freshwater in 2021.

Impact of AI :

- Training a model like GPT-3 requires up to 700,000 liters of water.
- A conversation with ChatGPT consumes between 10 and 25 milliliters of water, which adds up with millions of users.



DATA CONSUMPTION

Increasing Demand and Consequences

Growth of Data Centers:

- Development has increased sevenfold in Los Angeles over two years, putting pressure on water resources.

Environmental Consequences:

- Water consumption is becoming critical, especially in California, which is already facing drought conditions.
- Companies like Microsoft and Google report significant increases in their water consumption.



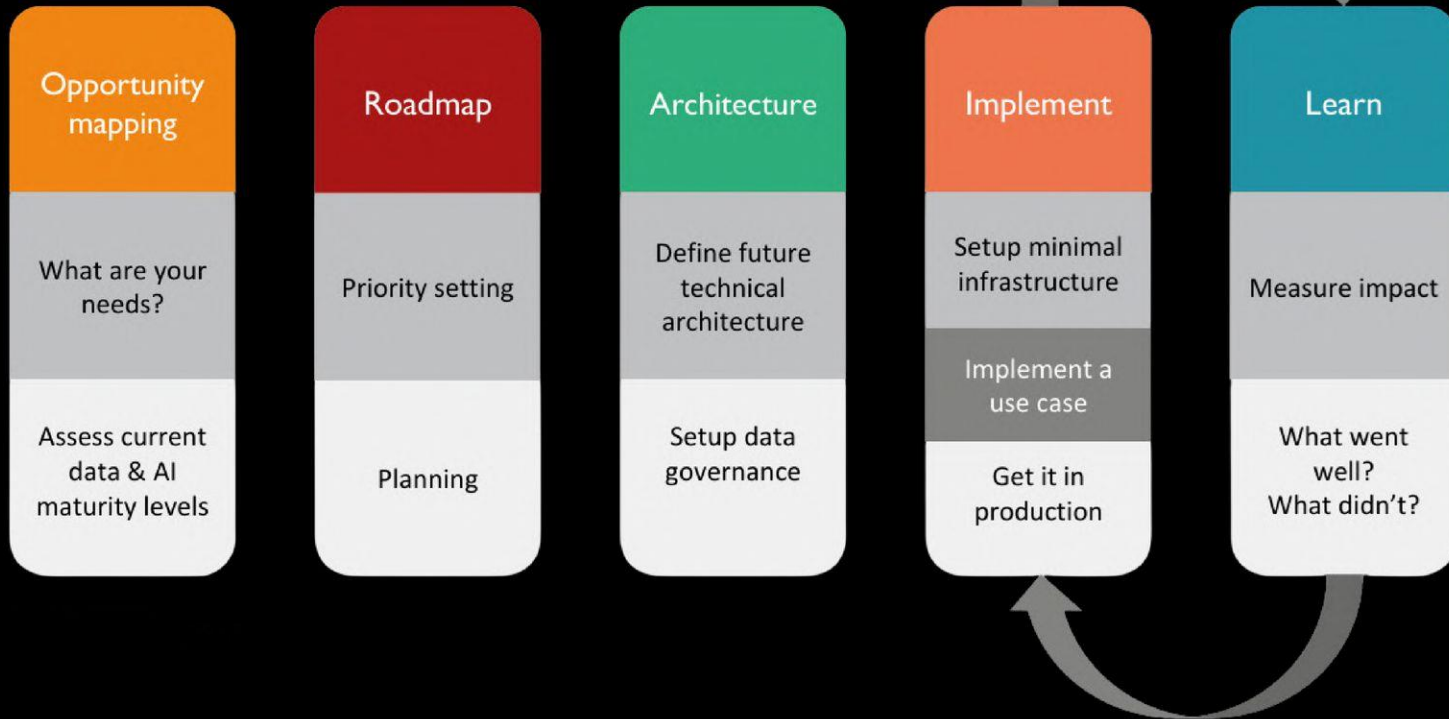
DATA CONSUMPTION

Sustainability = Asset Data Strategy + Data
Management (governance, integration, quality)
= Smart Data Management

Smart Data Management refers to the intelligent management of data that takes into account not only the quantity and quality of data but also its energy impact. Only at that point can we speak of Sustainable Operability for this aspect.



ROADMAP



SUSTAINABLE OPERABILITY



Scope M4S Benchmark Survey

Interreg Co-funded by the European Union
North-West Europe

More4Sustainability

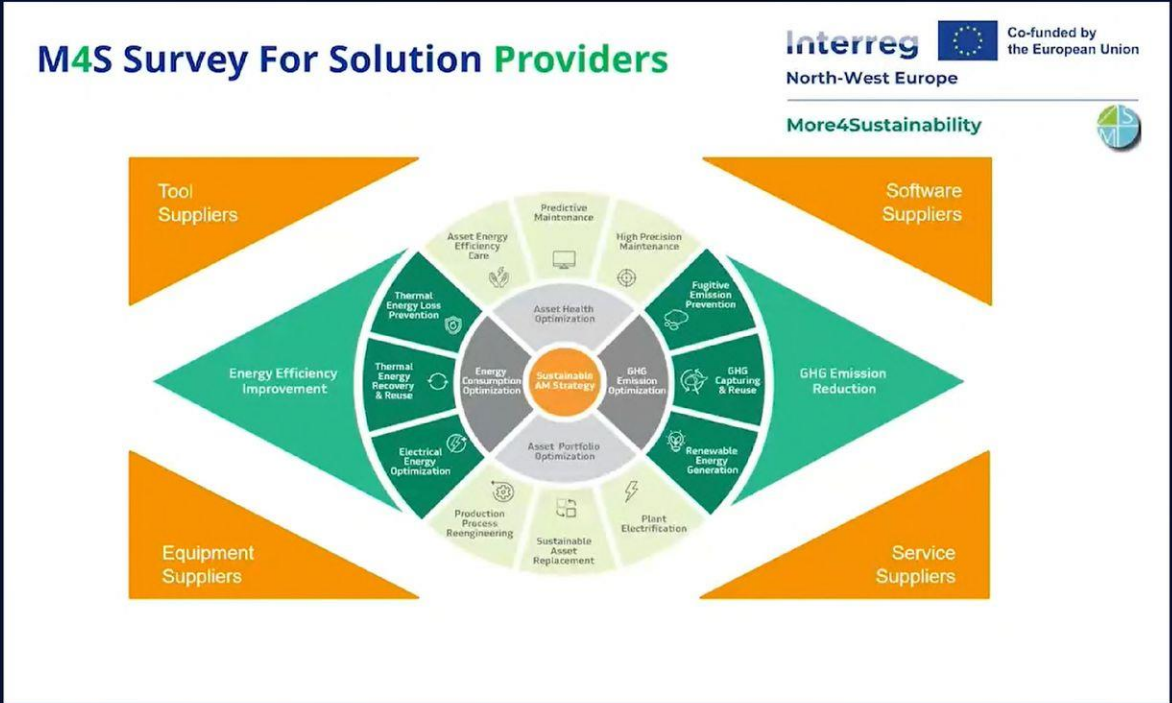
4 Countries in NWE



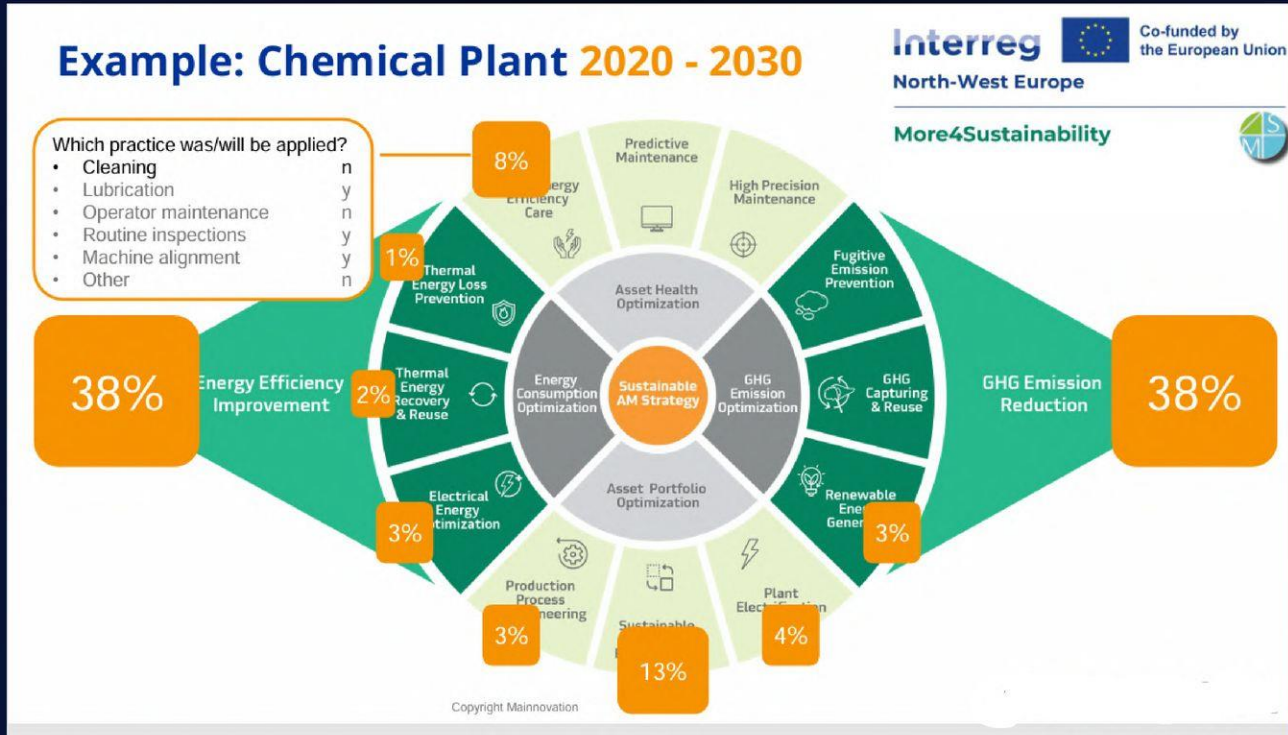
100+ Companies In Industry (AO's+SP's)

- | NACE | Industry |
|------|---|
| 10 | • Manufacture of food products |
| 11 | • Manufacture of beverages |
| 12 | • Manufacture of tobacco products |
| 13 | • Manufacture of textiles |
| 14 | • Manufacture of wearing apparel |
| 15 | • Manufacture of leather and related products |
| 16 | • Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials |
| 17 | • Manufacture of paper and paper products |
| 18 | • Printing and reproduction of recorded media |
| 19 | • Manufacture of coke and refined petroleum products |
| 20 | • Manufacture of chemicals and chemical products |
| 21 | • Manufacture of basic pharmaceutical products and pharmaceutical preparations |
| 22 | • Manufacture of rubber and plastic products |
| 23 | • Manufacture of other non-metallic mineral products |
| 24 | • Manufacture of basic metals |
| 25 | • Manufacture of fabricated metal products, except machinery and equipment |
| 26 | • Manufacture of computer, electronic and optical products |
| 27 | • Manufacture of electrical equipment |
| 28 | • Manufacture of machinery and equipment n.e.c. |
| 29 | • Manufacture of motor vehicles, trailers and semi-trailers |
| 30 | • Manufacture of other transport equipment |
| 31 | • Manufacture of furniture |
| 32 | • Other manufacturing |

SUSTAINABLE OPERABILITY



SUSTAINABLE OPERABILITY





The 22nd International Asset, Facility & Maintenance Management Conference

Thank you !



SAMIRA BEN ALI
Presidente of MARAMM



CONTACT

Mail : s.benali@maramm.org
<https://maramm.com>



GREENTECH TOUCH

CONTACT

Mail : s.benali@greentech-touch.com
<https://greentech-touch.com>