Capgemini

INTELLIGENT INDUSTRY *POWERED BY DATA*

Capgemini – pioneering the future

Introduction

The future of industry

At Capgemini we are pioneering what the future of industry will be.

We call it Intelligent Industry.

What's happening? Two significant convergences, that are redefining business models across industries.

The first convergence is that of physical and digital worlds coming together. The second is the movement of information technology (IT) into operational technology (OT), and the related continuity of data, from end-to-end.

And as IT begins to impact a business's core operations, and OT meshes with IT exciting new developments are possible: performance improvement, innovation, increased reliability, faster speed-to-market – ultimately, exceptional experiences for customers and the creation of new sources of value.

You can think of it as the evolution of Industry 4.0, where industrial companies completely transform across their entire value chain, thanks to taking a data-centric approach. From research & development, to designing a concept, through to engineering and manufacturing it, companies turn data into insight, actions, and a future that radically improves industrial operations, the supply chain, and service and support.

Why now?

Data is rewriting all the rules. And key technologies are converging at speed: AI and deep learning analytics, blockchain, cloud and edge computing, cybersecurity, 5G, IoT and data engineering. All securely connecting to the technology stack of the Industrial Internet of Things (IIoT).

These next-generation technologies are enabling new business models, autonomous decision-making and agile operations in every sector. And through smart connected assets, products and services, smart factories and smart operations, everything becomes intelligent.
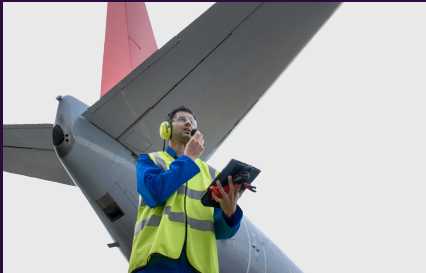
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AI & ANALYTICS
CLOUD
EDGE COMPUTING
CYBER SECURITY
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Benefits of Intelligent Industry

Transform your entire value chain

Intelligent Industry unlocks unlimited possibilities
for every organization in every sector.

HIGH VISIBILITY OPERATIONS

Fully connected supply chains,
logistics, distribution and service
management that is intelligent,
and able to respond rapidly
to change.

SMARTER DECISIONS
Through activation of data

Accurate, deep and timely data
analysis will be the core of more
intelligent decisions.

PRODUCTS BECOMING PLATFORMS
For services, or new services themselves

Turning single manufactured products into
the center of service-providing ecosystems.

HYPER-PERSONALIZATION

Customization of products
becomes possible at scale,
as intelligence and data are
integrated into the engineering
and manufacturing processes.

NEW BUSINESS & REVENUE MODELS

With the continuous flow of
data, value optimization and
creation becomes easier and
faster, throughout a product's
useful life.
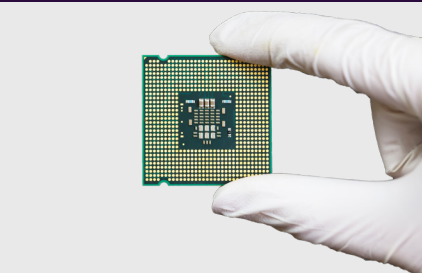
MANUFACTURING ON DEMAND

As economies move into an
era of sustainable growth, only
what is needed will be made.

ZERO DISTANCE
Between companies and their customers

Seeing in real-time what needs
fixing, and how customers are
using their products in order
to produce better versions.

Benefits of Intelligent Industry
What's possible now?

Thanks to technology like IoT sensors, cheap storage capability, higher computing power, and better connectivity, the ability to harness data is challenging every industry's structure, and especially traditional original equipment manufacturers (OEMs) and operators. The way that factories work is changing, becoming smarter with the application of analytic intelligence.

Meanwhile, new industry entrants are disrupting old business models, developing new insights and monetization methods. To win in this world means creating a model of manufacturing with self-learning at its core, using the data gathered as the foundation of new value chains.

Take for example the automotive industry, facing many disruptive forces, most notably the move towards autonomous vehicles, but also the need to move to green energy and changing consumer habits such as ridesharing. This is changing the way that industry players think about their design, manufacturing, data analytics and full vertically integrated value chain.

This approach can have an impact away from the factory floor too. Consider mining, where data generated from both mining equipment, and the operations they are used in, is a latent asset waiting to be used by companies to build more efficient and effective engineering solutions. By taking an Intelligent Industry approach, we can identify opportunities to enhance productivity in equipment, reduce costs and significantly improve the useful life of capital equipment in remote mines.

Capgemini has been working with leading automotive businesses and OEMs, and major mining companies, to invent their Intelligent Industry model, helping them to build software and technologies such as cloud and AI into what they make.

Definition
Intelligent Industry

Intelligent Industry (n): pioneering new ways of designing, manufacturing, operating and experiencing products and services, powered by data.

The core components

Digital Continuity
As organizations implement smart technologies, consistent data flows become vital. There must be digital continuity between engineering, manufacturing and operations: a single, connected and consistent source of data across the value chain as well as the product lifecycle, used to make better informed and intelligent decisions.

Smart Connected Products & Services
Intelligent Industry means products and services are now sources of data. With added intelligence and connectivity across the vast IIoT, smart products can unlock greater uptime, reduced costs, and improved workforce efficiency and real-time feedback loops to enable continuous improvement. Intelligent Industry also enables a wider portfolio of smart services associated with smart connected products: 'as-a-service' models open new ways to monetize the end consumer relationship. And so a system of connected products and services becomes an integral part of technology-driven smart infrastructure.

Smart Factories and Production
Intelligent Industry will change the way factories are designed and work. Digital twins mean operations can be endlessly refined and experimented with virtually, before deployment in the real world, and failures prevented. Machine learning solutions can optimize end-to-end flows across the factory and the full supply chain into and out of the factory, by anticipating demand fluctuations. And closer human-machine interfaces enable better-informed decisions and automated routine tasks on the factory floor. Intelligent Industry also works outside of the factory, making even remote oil fields and mining plants safer and more productive.

Smart Operations
Intelligent Industry creates new possibilities in operations, as well as reinventing supply chains at every level, and the systems that cities rely on. Smart connected operations will mean supply chains can respond instantly to delivery disruptions and changes, with assets tracked and shipment conditions monitored in real-time. Everything will get closer to the customer – inventory levels can be predicted and automatically topped up, delivery schedules updated, and a happy flow maintained. And something similar will happen for city systems, as transportation, healthcare and security management – Intelligent Industry will become the bloodstream of smart cities and modern urbanization.

Pioneering the convergence of IT and OT

Information Technology (IT) and Operational Technology (OT) have traditionally operated in two distinct domains.

For industrial companies IT systems cover enterprise resource planning (ERP), people, finance, customer relationship management (CRM) and other transactional business processes.

Operational Technology is the crucial layer that addresses the core business of such companies; it makes machines and the plant work – the hardware, software and systems used to engineer products and plants to perform actual operations.

We at Capgemini are pioneering the convergence of IT and OT. It will allow for an integrated end-to-end approach allowing industrial manufacturers to make even better – more intelligent – decisions.

Our capabilities

Capgemini is a world leader in technology consulting, IT, engineering and R&D services. We are uniquely positioned to work with our clients across the whole end-to-end value chain of Intelligent Industry, from the business model, to products, operations and services.

Industry 4.0 has unlocked the value in the realms of smart factories and smart manufacturing. And thanks to our capabilities, companies can go beyond Industry 4.0:

- **Consulting:** We accelerate the process of turning ideas into prototypes and scalable real-world solutions

- **Domain:** We know key industrial sectors, including aeronautical, manufacturing and energy

- **Engineering:** We think, invent and design the systems clients need, build them at scale and then run them

- **Partnerships:** We work with every type of technology and engineering supplier to achieve the best possible solutions and outcomes

- **Technology:** We understand inside out the key new technologies of Intelligent Industry, and how they can work together.

With changes to optimize processes, deliver successful products and new business models, taking an Intelligent Industry approach will help you to win.
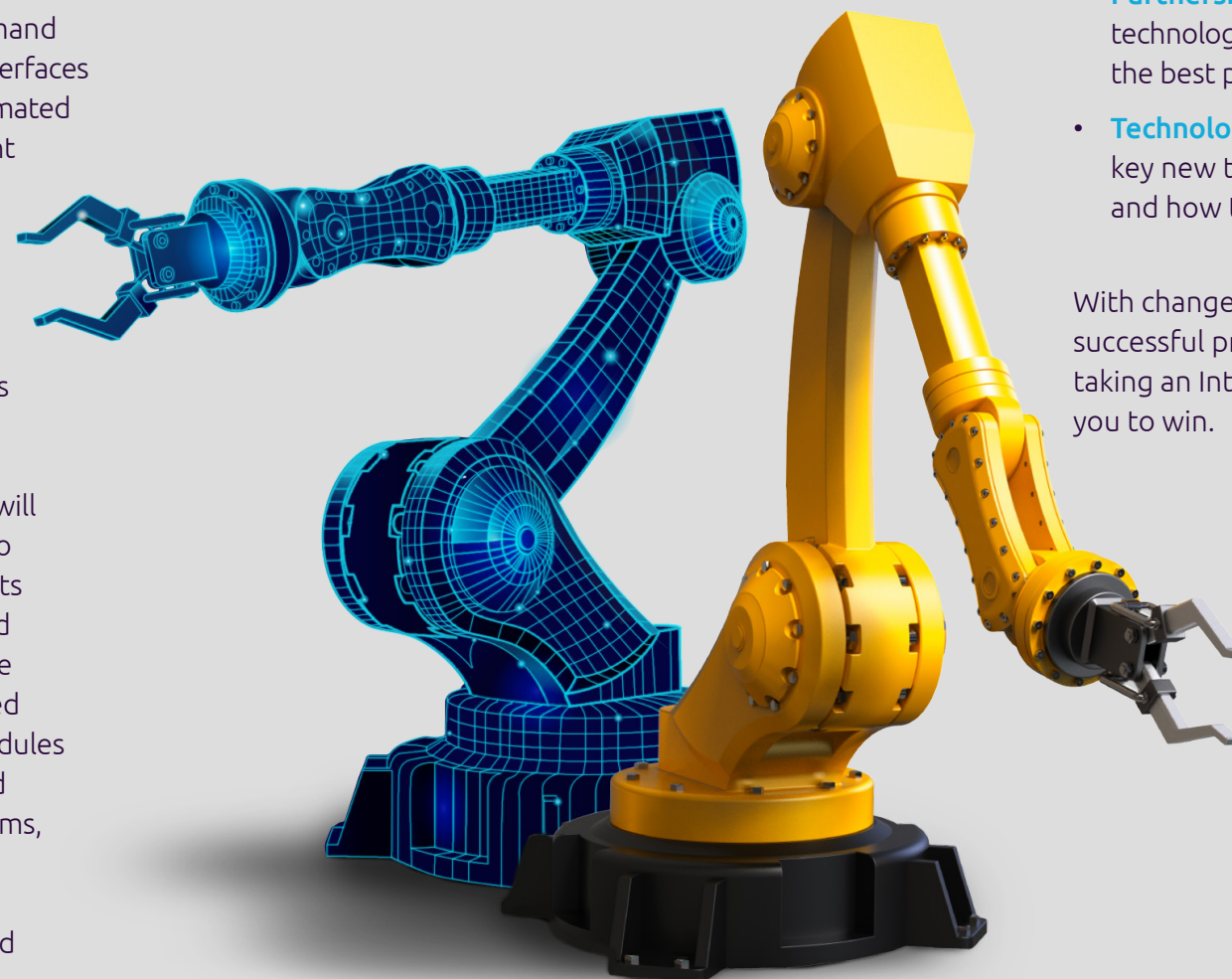
Impact Product

Taking an Intelligent Industry approach meant that our client, a medical devices manufacturer, could revitalize their R&D, reducing time-to-market for end-to-end, integrated development of their next generation of connected products, as well as lowering costs, and strengthening delivery processes. We have worked with them to also develop: a product reliability prediction model, backed with performance data analytics; an upgradable connectivity solution that can be assembled on devices; and a new services model.

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Impact Factory

We designed and implemented a powerful IIoT solution for smart factory operations, enhancing our energy sector client's ability to help their customers acquire, transport, and refine hydrocarbons more effectively – and with a smaller environmental footprint. Our unique methodology connecting IT and OT into a single solution enables integrated data from all manufacturing devices and machines. Which means the client has greater visibility into its manufacturing processes, leading to a 12% increase in machine utilization at different sites within five months of deployment, as well as millions of Euros in savings.

CONNECTING
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CONNECTING

12%

Increase in machine utilization at different sites within five months of deployment

Success story 3

Impact Assets

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We helped our client, a world-leading energy and utility company, develop a smarter and safer way of maintaining its assets. Based on our X-IoT platform, it allows our client to improve safety equipment inspection monitoring at its nuclear plants. The Capgemini X-IoT platform enables industrialization and innovation, providing organizations with the ability to automatically collect, analyze and act on data from connected devices, sensors, machines and people.

Why work with Capgemini?

Pioneering Intelligent Industry in every sector

Capgemini is here to partner with you to make intelligent products and intelligent services, leveraging the power of data all along the value chain, and to help you become an agile business that creates new sources of value.

With efficiencies gained, production times shortened and downtime reduced, companies will now have the potential to be nimble, responding to what the data says.

For every sector we work in, we can identify relevant new technologies and the best way to adopt and combine them. We have the ability to think and invent with our clients, design the systems they need, build and then run them. We can find new revenue streams and cost efficiencies for our clients, transform their business models and improve experiences for their end-customers.

The future of industry is *INTELLIGENT*
The future of industry is *HERE*
And it's working *NOW*

ENERGY
AUTOMOTIVE
LOGISTICS
MINING
OIL & GAS
PHARMACEUTICALS
FINANCIAL
AEROSPACE
EDUCATION
COMMERCE
TEXTILES
HEALTH
MEDIA
TRANSPORT
UTILITIES
IN EVERY SECTOR

Capgemini partners with its clients to make Intelligent Industry a reality. Our pioneering approach is to combine Information and Operational technologies. Along the industrial value chain from design, research & development, engineering, manufacturing, operations, supply chain and support. Connecting intelligent products and services that leverage the power of data to deliver innovation, create new customer experiences and deliver new sources of value.

Visit us:
Capgemini.com/intelligentindustry

For more details email:
intelligent.industry@capgemini.com

PIONEERING INTELLIGENT INDUSTRY POWERED BY DATA

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People matter, results count.